

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. R5-2011-0029

WASTE DISCHARGE REQUIREMENTS  
FOR  
CALAVERAS COUNTY DEPARTMENT OF PUBLIC WORKS  
ROCK CREEK SOLID WASTE FACILITY  
CLASS II LANDFILL  
CLASS II SURFACE IMPOUNDMENT  
CONSTRUCTION, OPERATION, CLOSURE, AND POST-CLOSURE MAINTENANCE  
CALAVERAS COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Central Valley Water Board) finds that:

1. Calaveras County Department of Public Works (hereafter Discharger) owns and operates the Rock Creek Solid Waste Facility (facility), a solid waste landfill about one mile east of Milton, in Sections 11 and 14, T2N, R10E, MDB&M, as shown in Attachment A, which is attached hereto and made part of this Order by reference.
2. The facility is located on an approximately 200-acre property at 12021 Hunt Road, Milton, California. The existing and future landfill area is approximately 57 acres of which 20 acres have been constructed (lined) for the discharge of non-hazardous and designated wastes. The facility consists of existing and future lined Class II landfill units divided by "phases" and a Class II surface impoundment for leachate collection. The facility is permitted to receive up to 500 tons of waste per day. The landfill units and surface impoundment are shown in Attachment B, which is attached hereto and made part of this Order by reference. The facility is comprised of Assessor's Parcel Numbers 50-025-15 and 50-029-20.
3. On 1 November 2010, the Discharger submitted an amended Report of Waste Discharge (RWD) consisting of an 18 October 2010 *Phase I Partial Final Closure and Postclosure Maintenance Plan* for the closure of the Phase I-A and Phase I-B areas at the landfill. Approval of the closure and post-closure maintenance plan requires revision of the waste discharge requirements (WDRs) to approve the proposed final cover design. The information in the amended RWD has been used in writing these revised WDRs. The RWD contains the applicable information required in California Code of Regulations (CCR) Title 27, Chapter 4, Subchapter 3, Article 4.
4. On 24 June 2005, the Central Valley Water Board issued WDRs Order No. R5-2005-0100 in which the landfill units were classified as Class II landfills for the discharge of non-hazardous waste, municipal solid waste, and designated waste. The WDRs also classified the leachate impoundment as a Class II surface impoundment for the discharge of leachate from the Class II landfills. This Order continues to classify the landfills and

surface impoundment as Class II units in accordance with CCR Title 27, Section 20005, et seq. (Title 27).

5. Existing Class II landfill units include Phase I-A, Phase I-B, Phase II-A, and Phase II-B. Future Class II landfill units will be constructed in Phase III and Phase IV. The existing and future landfill units and the Class II surface impoundment are described as follows:

<b><u>Unit</u></b>	<b><u>Area</u></b>	<b><u>Liner Description (bottom to top)</u></b>	<b><u>Status</u></b>
Phase I-A	5.67 acres	24 inches of compacted clay overlain with a vapor barrier and blanket leachate collection and removal system (LCRS).	No longer accepting waste. To be closed with the final cover design approved in this Order.
Phase I-B	3.45 acres	24 inches compacted clay, 60-mil high-density polyethylene (HDPE), one foot thick blanket LCRS.	Not currently accepting waste. Most of unit to be closed with the final cover design approved in this Order, except for south end adjacent to Phase II-A.
Phase II-A	4.98 acres	GCL, 60 mil HDPE and one foot thick blanket LCRS. A secondary composite liner and LCRS are beneath the central portions of the Phase II-A of the LCRS.	Existing unit accepting waste.
Phase II-B	5.71 acres	One foot thick prepared subgrade with maximum hydraulic conductivity of $1 \times 10^{-5}$ cm/s, 60-mil HDPE geomembrane, geocomposite drainage layer, GCL, 60 mil HDPE geomembrane, 9-inch thick gravel LCRS, 8 oz. non-woven geotextile filter, 15-inch thick operations layer.	Existing unit accepting waste.
Phase III	24.59 acres	Same liner system design as Phase II-B.	Future phase
Phase IV	12.43 acres	Same liner system design as Phase II-B.	Future phase
Class II Surface Impoundment	0.70 acres	GCL, 60-mil HDPE geomembrane, LCRS, 60-mil HDPE geomembrane.	Existing unit accepting leachate from the Class II landfill units.

6. On 9 October 1991, the United States Environmental Protection Agency (USEPA) promulgated federal MSW regulations under the Resource Conservation and Recovery Act (RCRA), Subtitle D (Title 40, Code of Federal Regulations, Part 258), hereafter referred to as "Subtitle D". These regulations apply to all California Class II and Class III landfills that accept MSW.

### **WASTE CLASSIFICATION AND UNIT CLASSIFICATION**

7. The Discharger proposes to continue to discharge municipal solid waste, non-hazardous ash, sewage treatment plant sludge, petroleum contaminated soil, and miscellaneous contaminated materials in the existing and future Class II landfill units, as shown on Attachment B. These wastes are classified as inert waste, nonhazardous solid waste, or designated waste, using the criteria set forth in CCR Title 27 Section 20164. Nonhazardous solid wastes includes municipal solid wastes, as referred to in the Code of Federal Regulations, Title 40, Part 258.2. These classified wastes may be discharged only in accordance with CCR Title 27, Resolution No. 93-62, and the Code of Federal Regulations, Title 40, Part 258 as required by this Order.
8. The Discharger also proposes to continue discharging leachate from the Class II landfills to the Class II surface impoundment. The leachate from the Class II landfill units is classified as a designated waste. The Discharger proposes to continue returning leachate from the surface impoundment or landfill sumps to the lined Class II landfill areas for dust control per Title 27 Sections 20200(d) and 20340(g). Leachate can only be used for dust control in composite lined areas, so Phase I-A is excluded.
9. California Water Code Section 13173 defines "designated waste" as either of the following:
  - a. Hazardous waste that has been granted a variance from hazardous waste management requirements pursuant to Health and Safety Code section 25143.
  - b. Nonhazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state as contained in the appropriate state water quality control plan.
10. Designated waste can be discharged only at Class I waste management units, or at Class II waste management units which comply with Title 27 and have been approved by a regional water board for containment of the particular kind of waste to be discharged.
11. A wood waste handling area is located at the south end of the landfill property where stumps, wood waste, and other wood products are stored for recycling or for use as alternative daily cover for the landfill.

## SITE DESCRIPTION

12. The facility is in the lower foothills of the Sierra Nevada mountains between elevation 300 at the south end of the property and elevation 520 at the north ridge of the canyon head on the north property line. The main feature at the site is the north-south canyon which includes the permitted landfill area. The drainage shed for the canyon is contained entirely on the property. There is a seasonal creek that flows to the south before exiting the site near Rock Creek Road. The side slopes of the canyon wall are roughly 3:1 flattening near the channel flowline in the center of the canyon.
13. The site is underlain by an interbedded sedimentary sequence, between 25 to 175 feet thick. The sediments range from unconsolidated gravelly sands and sandy clays to sandstone and claystone.<sup>1</sup> Beneath the sedimentary sequence, a greenstone or greenstone conglomerate has been encountered in several borings at depths of 80 to 170 feet below ground surface. Granitic bedrock has been encountered beneath the greenstone conglomerate at depths of several hundred feet.
14. Hydraulic testing conducted in wells screened across the saturated portion of the sedimentary sequence found hydraulic conductivity to range from  $1.2 \times 10^{-4}$  to  $6.7 \times 10^{-6}$  cm/s.<sup>2,3</sup> Based on a series of in situ permeability tests conducted in the lower greenstone conglomerate unit, permeability ranges from  $1.5 \times 10^{-5}$  to  $9.8 \times 10^{-6}$  cm/s.<sup>4</sup>
15. Based on a site specific seismic analysis, the controlling maximum credible earthquake (MCE) for the site is a moment magnitude (Mw) 6.5 event along the Foothills Fault System which includes the Bear Mountain Fault, at a closest rupture distance of 12 km (7.5 miles) from the site. It is estimated that a MCE event would produce a PGA of 0.25g at the site with a return period of 6,108 years.
16. Land use within 1,000 feet of the facility is open rangeland used for grazing and ranching.
17. The facility receives an average of 19.42 inches of precipitation per year as measured at the New Hogan Dam between the years of 1959 and 1986. The mean evaporation for this facility is 75 inches per year as measured at the New Hogan Dam between the years 1968 and 1985. Based on these data, average annual net evaporation at the facility is 56 inches.

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<sup>1</sup> Geotechnical Research Development. *Rock Creek Landfill, Preliminary Geotechnical/Geohydrological Study*. March 1996.

<sup>2</sup> Condor Earth Technologies, Inc. June 1992.

<sup>3</sup> Herzog Associates. *Report Hydrogeological Evaluation, Rock Creek Landfill Site, Calaveras County, California*. May 1989.

<sup>4</sup> Herzog Associates, May 1994.

18. The 1000-year, 24-hour precipitation event is estimated to be 5.45 inches and the 100-year wet season precipitation is 34.6 inches based on Department of Water Resources' bulletin entitled *Rainfall Depth-Duration-Frequency for California*, revised November 1982, updated August 1986.
19. The waste management facility is not within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community-Panel Number 060633 0250 B.
20. Storm water sedimentation basins are located south of the landfill. The basins detain storm water during the rainy season and are normally dry during the summer months.
21. There are more than 15 municipal, domestic, industrial, or agricultural groundwater supply wells within one mile of the site. Four of these are agricultural groundwater supply wells. There are no residences or domestic wells within 1,000 feet of the facility. Calaveras County regularly takes water quality samples of off-site private wells every 2.5 years.
22. An easement for the Stockton East Water District's proposed Farmington Canal Project crosses the Rock Creek Facility at the downstream or southerly end of the project site. The easement passes approximately 400 feet from the southernmost boundary of planned waste placement. The proposed canal would cross over the existing site creek in a flume or other structure, which would physically separate the two streams of water. The beneficial uses of the water conveyed by the proposed canal include agricultural and domestic use. No other easements are recorded.

### **SURFACE WATER AND GROUNDWATER CONDITIONS**

23. The *Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin, Fourth Edition* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
24. Surface drainage flows west towards Rock Creek thence to Littlejohns Creek a tributary to the San Joaquin River and the Sacramento-San Joaquin Delta in the Duck-Littlejohns Hydrologic Area (531.40) of the San Joaquin River Basin.
25. The designated beneficial uses of the Sacramento-San Joaquin Delta, as specified in the Basin Plan, are: municipal and domestic supply; agricultural supply; industrial service supply; industrial process supply; water contact and non-contact water recreation; warm freshwater habitat; cold fresh water habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; wildlife habitat; and navigation.
26. The first significant encountered groundwater is about 30 feet below the native ground surface. Groundwater elevations range from approximately 290 feet MSL to 400 feet

MSL. Perched groundwater exists at the facility. Springs are present at the east and west facing slopes in the upper part of the canyon.

27. Monitoring data as of 2010 indicates background groundwater quality has an electrical conductivity (EC) typically ranging between 200 and 250 micromhos/cm at monitoring well U-1 and between 650 and 850 micromhos/cm at U-2, with total dissolved solids (TDS) typically ranging between 100 and 200 mg/l at U-1 and 450 and 550 mg/L in U-2.
28. The direction of groundwater flow is toward the south-southwest. Typical groundwater gradient ranges from approximately 0.02 to 0.08 feet per foot. The average groundwater velocity is approximately  $2.4 \times 10^{-5}$  cm/s or 25 feet per year.
29. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal water supply, agricultural supply, industrial service supply, and industrial process supply.

### **GROUNDWATER AND UNSATURATED ZONE MONITORING**

30. The existing groundwater monitoring network for the Phase I and II landfill units and the Class II surface impoundment consists of "background" monitoring wells U-1 and U-2, and compliance monitoring wells D-1, D-4, D-8 through D-12, and HP-3. Monitoring well D-9 is located downgradient from the surface impoundment.
31. The existing unsaturated zone monitoring network consists of a background pressure/vacuum lysimeter L-5, two downgradient lysimeters L-1R and L-2R, a pan lysimeter GPL-1 and two subdrain outlet points SD-1 and SD-2. Additionally, three landfill gas probes (GP-IIB-1, GP-IIB-2 and GP-IIB-3) are located beneath the Phase II-B landfill. The locations of these unsaturated monitoring points are shown on Attachment B.
32. Volatile organic compounds (VOCs) are often detected in a release from a landfill, and are the primary waste constituents detected in groundwater beneath a municipal solid waste landfill. Since VOCs are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a Unit.
33. CCR Title 27 Sections 20415(e)(8) and (9) provide for the non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a Unit in accordance with CCR Title 27 Section 20415(b)(1)(B)2.-4. However, CCR Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.
34. The Central Valley Water Board may specify a non-statistical data analysis method pursuant to CCR Title 27 Section 20080(a)(1). California Water Code Section 13360(a)(1) allows the Central Valley Water Board to specify requirements to protect underground or

surface waters from leakage from a solid waste site, which includes a method to provide the best assurance of determining the earliest possible detection of a release.

35. In order to provide the best assurance of the earliest possible detection of a release of non-naturally occurring waste constituents from a Unit, this Order specifies a non-statistical method for the evaluation of monitoring data.
36. The specified non-statistical method for evaluation of monitoring data provides two criteria (or triggers) for making the determination that there has been a release of non-naturally occurring waste constituents from a Unit. The presence of two non-naturally occurring waste constituents above their respective method detection limit (MDL), or one non-naturally occurring waste constituent detected above its practical quantitation limit (PQL), indicates that a release of waste from a Unit has occurred. Following an indication of a release, verification testing will be conducted to determine whether there has been a release from the Unit, or there is a source of the detected constituents other than the landfill, or the detection was a false detection. Although the detection of one non-naturally occurring waste constituent above its MDL is sufficient to provide for the earliest possible detection of a release, the detection of two non-naturally occurring waste constituents above the MDL as a trigger is appropriate due to the higher risk of false-positive analytical results and the corresponding increase in sampling and analytical expenses from the use of one non-naturally occurring waste constituent above its MDL as a trigger.
37. The Discharger submitted a 27 February 2007 Water Quality Protection Standard (WQPS) and 5 February 2008 supplemental information as required by previous WDRs Order No. R5-2005-0100. The revised WQPS proposed by the Discharger uses an intrawell data analysis method for wells D-4, D-8, D-9, and HP-3 to calculate tolerance limits, and an interwell data analysis method for well D-1 to calculate a tolerance limits for each constituent. Subsequent annual monitoring reports have also included limits for new wells D-10, D-11, and D-12.

### **GROUNDWATER DEGRADATION**

38. VOCs have not been detected at or above the detection limit in any existing monitoring well.
39. Monitoring well D-1 has shown increasing trends in inorganic constituent (TDS, chloride, specific conductivity, and sulfate) concentrations since approximately 1997. On 16 March 2005, the Discharger submitted the *Evaluation of Detection Monitoring Well D-1 Rock Creek Solid Waste Facility Report*. The Discharger concluded that the increasing trend correlates to the increasing groundwater elevation, possible dissolution of gypsum in previously dry soils, and that the groundwater chemistry of D-1 plots along the mixing line trends of upgradient wells U-1 and U-2. Central Valley Water Board staff believes further data collection and evaluation is required to support the Discharger's conclusion.

40. Monitoring well D-8 has shown an increasing trend for sulfate since 2005. The Discharger has been required to submit additional water chemistry diagrams in monitoring reports to assess the increasing sulfate. The Discharger concluded that the increasing sulfate was related to the complex geochemistry at the site similar to well D-1, and that it is not related to a release from the landfill given that other constituents like chloride are not increasing in the well. Central Valley Water Board staff believes further data collection and evaluation is required to support the Discharger's conclusion.

### **LINER PERFORMANCE DEMONSTRATION**

41. On 15 September 2000 the Central Valley Water Board adopted Resolution No. 5-00-213 *Request For The State Water Resources Control Board To Review The Adequacy Of The Prescriptive Design Requirements For Landfill Waste Containment Systems To Meet The Performance Standards Of Title 27*. The State Board responded, in part, that "a single composite liner system continues to be an adequate minimum standard" however, the Central Valley Water Board "should require a more stringent design in a case where it determines that the minimum design will not provide adequate protection to a given body of groundwater."

In a letter dated 17 April 2001, the Executive Officer notified Owners and Operators of Solid Waste Landfills that "the Board will require a demonstration that any proposed landfill liner system to be constructed after 1 January 2002 will comply with Title 27 performance standards. A thorough evaluation of site-specific factors and cost/benefit analysis of single, double and triple composite liners will likely be necessary."

42. On 28 January 2005, the Discharger submitted a liner performance standards demonstration letter, *Base Liner Demonstration for Class II, Cell II-B at the Rock Creek Solid Waste Facility, Calaveras County, California*, which included a cost analysis for the proposed waste containment system described in Findings 51-52. The liner proposed by the Discharger includes a primary and secondary base liner system for the floor of Phase II-B and a single composite liner for the side slopes. Per the demonstration letter, a double liner system for the base of Phase II-B and future landfill units would provide protection for waters of the state through full containment of waste. This type of system exceeds the minimum of a single liner system and is also similar to other liner systems approved by the Central Valley Water Board.
43. Central Valley Water Board staff responded in a letter dated 7 February 2005, supporting the submitted performance demonstration letter. Staff determined that the Discharger's proposed double liner system design, with a good Construction Quality Assurance program including a leak location survey, meets the performance standard for a Class II unit.



## **CONSTRUCTION AND ENGINEERED ALTERNATIVE**

44. On 17 June 1993, the State Water Resources Control Board adopted Resolution No. 93-62 implementing a State Policy for the construction, monitoring, and operation of municipal solid waste landfills that is consistent with the federal municipal solid waste regulations promulgated under Title 40, Code of Federal Regulations, Part 258 (Subtitle D).
45. Resolution No. 93-62 requires the construction of a specified composite liner system at new municipal solid waste landfills, or expansion areas of existing municipal solid waste landfills, that receive wastes after 9 October 1993.
46. Resolution No. 93-62 also allows the Central Valley Water Board to consider the approval of engineered alternatives to the prescriptive standard. Section III.A.b. of Resolution No. 93-62 requires that the engineered alternative liner systems be of a composite design similar to the prescriptive standard.
47. Title 27 CCR Section 20080(b) allows the Central Valley Water Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with CCR Title 27 Sections 20080(c)(1) and (2), the Discharger must demonstrate that the prescriptive design is unreasonably and unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in CCR Title 27 Section 20080(b), or would be impractical and would not promote attainment of applicable performance standards. The Discharger must also demonstrate that the proposed engineered alternative liner system is consistent with the performance goal addressed by the particular prescriptive standard, and provides protection against water quality impairment equivalent to the prescriptive standard in accordance with CCR Title 27 Section 20080(b)(2).
48. California Water Code Section 13360(a)(1) allows the Central Valley Water Board to specify the design, type of construction, and/or particular manner in which compliance must be met in waste discharge requirements or orders for the discharge of waste at solid waste disposal facilities.
49. The Discharger proposes a liner system which will be designed, constructed, and operated in accordance with the criteria set forth in Title 27, and the provisions in State Water Resources Control Board Resolution No. 93-62 for municipal solid wastes.
50. On 24 February 2005, the Discharger submitted a Report of Waste Discharge requesting approval of an engineered alternative to the prescriptive standard for liner requirements.
51. The engineered alternative proposed by the Discharger for the base liner of Phase II-B and future landfill units consists of a double liner system comprised of, in ascending order: 12-inch thick prepared subgrade (constructed of select fine grain materials which shall be

52. The proposed side slope liners consist of, in ascending order: prepared subgrade (providing a surface that is smooth and free from rocks, sticks, and other debris that could damage or otherwise limit the performance of the above lying geosynthetics), geosynthetic clay liner, 60-mil HDPE geomembrane, and 24-inch thick operations layer. Because the side slopes will have 2:1 slopes, liquid head is not likely to build up on the side slope liner.
53. The Discharger adequately demonstrated that construction of a Subtitle D prescriptive standard liner would be unreasonable and unnecessarily burdensome when compared to the proposed engineered alternative design. The Discharger has demonstrated that the proposed engineered alternative is consistent with the performance goals of the prescriptive standard and affords at least equivalent protection against water quality impairment.
54. The LCRS is composed of a 9-inch thick layer of gravel on the floor overlain by an 8 oz/sy nonwoven geotextile between the gravel and operations soil layer. The gravel drainage layer will be equipped with a series of perforated HDPE pipes that gravity drain to wet wells that will be automatically pumped as liquid reaches predetermined levels. The LCRS drainage layer is sized to accommodate a design flow of 72 gallons per minute, which is based on twice the anticipated peak leachate flow of the combined flows from Phases I and II. Leachate from the landfills drains to the central collection trench in the center of each unit, and then to a wet well. The wet well collects liquid until a predetermined level is reached and then a float switch will turn on a pump to evacuate the liquid to the surface impoundment. In the event of a pump failure, the leachate will accumulate in the wet well until it reaches the level of the discharge pipe. Once the level reaches the discharge pipe, the leachate will gravity flow to the surface impoundment.
55. A subdrain was installed beneath the Phase I-B and Phase II-A landfill along the bottom of the canyon to drain seasonal seeps in the side slopes beneath the base liner system. The invert of the subdrain lies a minimum of five feet below the top of the composite liner system to ensure at least a five-foot separation between wastes and the highest anticipated elevation of groundwater, including the capillary fringe.
56. In December 1999, after construction of the Phase II-A liner, the Discharger discovered water beneath the liner section at the toe of the eastern sideslope in Phase II-A. The Discharger submitted a *Revised Construction Detail for Phase II-A Sideslope Liner Section* dated 9 February 2001 to provide for drainage of this water. The revised

construction consisted of the installation of a subdrain along the toe of the eastern sideslope within Phase II-A. This subdrain was constructed similar to that below Phase II-A and designed to maintain at least a five-foot separation between waste and the highest anticipated groundwater. A 60-mil geomembrane was placed between the geocomposite and the GCL. Water entering the geocomposite gravity flows to a sump at the toe of the eastern sideslope. The sump provides for at least five feet of separation between the water in the sump and the waste. The Discharger uses water collected from the sump for dust control within the lined areas of the landfill or discharges it to the existing surface impoundment. This subdrain has been extended as part of the construction of Phase II-B.

57. The Discharger has installed three unsaturated zone landfill gas probes to serve as unsaturated zone monitoring points. These probes, designated GP-IIB-1, GP-IIB-2 and GP-IIB-3, are installed beneath the secondary liner of Phase II-B.
58. Construction will proceed only after all applicable construction quality assurance plans have been approved.
59. The Discharger submitted a slope stability report for Phase II-B, dated April 2005. The slope stability report demonstrates that the structural components of Phase II-B will withstand the forces of the Maximum Credible Earthquake (MCE) without failure of the containment systems or environmental controls.

### **CLASS II SURFACE IMPOUNDMENT**

60. A former Class II surface impoundment for Phase I-A and I-B was constructed with a double liner system for containment of landfill leachate. The design of this system consisted of an inner liner, a synthetic drainage layer, and an outer clay liner at least two feet thick. The initial surface impoundment was clean closed in accordance with closure requirements for surface impoundments prescribed by Title 27. All materials were removed.
61. The existing Class II impoundment, constructed during Phase II-A, is immediately south of the Phase II footprint and has a capacity of approximately two million gallons. It is composed of a double liner system with an intervening LCRS. The primary liner consists of 60-mil HDPE geomembrane liner over a drainage layer, geocomposite on the side slopes and a one foot thick gravel layer on the base, over a 60-mil HDPE geomembrane liner over a GCL. The gravel drainage layer is drained by a series of perforated HDPE pipes that gravity drain to a sump in the eastern corner of the impoundment. Access to the sump is provided by a riser pipe. A permanently installed pump evacuates liquid that accumulates in the sump. Leachate is recirculated within the impoundment to enhance evaporation.

62. The surface impoundment is designed to contain water generated during a 1,000-year, 24-hour storm event and to receive leachate generation from the existing cells and Phase II-B while maintaining two feet of freeboard.

### **LANDFILL CLOSURE**

63. The Discharger submitted an 18 October 2010 *Phase I Partial Final Closure and Postclosure Maintenance Plan* for closure and post-closure maintenance of Phase I-A and most of the Phase I-B landfill units. Closure construction is planned to begin in late June 2011 and be completed by December 2011.

64. Title 27 Section 21090 provides the minimum prescriptive final cover components for landfills consisting of, from bottom to top, the following layers:

- a. Two-foot soil foundation layer.
- b. One-foot soil low flow-hydraulic conductivity layer, less than  $1 \times 10^{-6}$  cm/s or equal to the hydraulic conductivity of any bottom liner system.
- c. One-foot soil erosion resistant layer.

Title 27 allows engineered alternative final covers provided the alternative design will provide a correspondingly low flow-through rate throughout the post-closure maintenance period.

65. The Discharger proposed an engineered alternative final cover consisting of, from bottom to top, the following layers:

- a. 18-inch thick soil foundation layer.
- b. 40-mil linear low density polyethylene (LLDPE) geomembrane, textured on both sides.
- c. Geocomposite drainage layer.
- d. 18-inch thick soil vegetative/erosion resistant layer.

66. The Discharger submitted an October 2010 *Engineering Design Report* in Exhibit D of the closure plan. The report compares the hydraulic performance of a final cover with a geosynthetic clay liner (GCL) and a geomembrane (similar to a prescriptive final cover) with a final cover with a geomembrane and geocomposite drainage layer (the proposed final cover) using the Hydrologic Evaluation of Landfill Performance (HELP) computer model. The results indicated significantly higher flow rates through the proposed final cover; however, the report concluded the leakage rate of 18.6 gallons per acre per year through the proposed cover was insignificant relative to the moisture-holding capacity of the waste, using less than one percent of the moisture-holding capacity over a 30-year period. The report also states that the moisture-holding capacity calculations are conservative since they do not account for the condensate that will be removed by the proposed landfill gas extraction system which was calculated at approximately 75 gallons per day.

67. The Engineering Design Report includes a January 2010 *Slope Stability of Final Cover System* report in Appendix C. The report analyzes the stability of the 3:1 side slopes and the interfaces between the layers of the proposed final cover. The proposed geocomposite drainage layer is intended to reduce seepage forces on the interface between the vegetative soil layer and the textured LLDPE layer to maintain interface shear strength following heavy precipitation events. Title 27 requires a static factor of safety of 1.5 be maintained. The Discharger's analysis indicates the cover will be stable if a friction angle of 26.6 degrees can be achieved. Title 27 also requires that a dynamic factor of safety of 1.5 or greater must be achieved for the critical slope unless a more rigorous method is used that provides an estimate of the seismically induced displacement that shows the integrity of the cover will be maintained. Displacements of up to 12 inches are commonly used for final covers. The Discharger's analysis indicates displacement of 2.8 inches under the MCE with peak ground acceleration of 0.25 g. The Discharger proposes laboratory testing of the critical interfaces under submerged conditions to verify appropriate shear strength and displacement. This Order requires laboratory testing of the critical final cover interfaces to ensure minimum shear strengths shown in Table 1 of the slope stability report and displacement of less than 3 inches are achieved.
68. As required by Title 27, the closed landfill will have benches every 50 vertical feet, and the top deck slope will be at least 3 percent. Maximum side slope steepness will be 3:1 and the height of the landfill will be below 524 feet elevation above mean sea level. Survey monuments will be installed to monitor future settlement of the landfill. Drainage features are designed for the 1,000-year 24-hour storm event and include perimeter concrete and grass-lined v-ditches and 12-foot wide drainage benches. The vegetative layer will be fertilized, seeded with a binder and stabilized with wood mulch in the upper six inches and straw wattles every 10 vertical feet.
69. The edges of the final cover will be sealed either by connecting the geomembrane to the liner system or in the absence of a liner geomembrane, an anchor trench will be constructed to secure the perimeter of the barrier layer and an interceptor trench will be installed upslope to control potential condensate drainage along the underside of the cover geomembrane.
70. An active landfill gas control system will also be installed during closure of the landfill. Landfill gas extraction wells will be fitted with slip couplings to accommodate settlement of the waste. The Discharger estimates that 74 gallons per day of landfill gas condensate will be generated. Landfill gas condensate will be discharged to LCRS riser pipes on the landfill liner side slopes where it will gravity drain to the LCRS and to the Class II surface impoundment.
71. The October 2010 *Engineering Design Report* includes full design level drawings in Appendix E and an August 2010 *Construction Quality Assurances Plan* in Appendix F. July 2010 *Contract Specifications* are included in Appendix G. The Engineering Design

Report, including the drawings, CQA Plan, and contract specifications are approved by the Central Valley Water Board with the adoption of this Order. This Order also approves the proposed final cover components for future closure phases for the landfill; however, design documents for future phases must be submitted for review and approval to verify they are in compliance with Title 27 and this Order.

### **LANDFILL POST-CLOSURE MAINTENANCE**

72. The post-closure maintenance plan is included in Part III of the 18 October 2010 *Phase I Partial Final Closure and Postclosure Maintenance Plan*. The plan includes inspection, maintenance, and monitoring of the landfill during the post-closure maintenance period, and includes information about the post-closure maintenance cost estimate for the entire facility. Inspection and maintenance will include the condition of the final cover, drainage features, LCRS, groundwater monitoring wells, unsaturated zone monitoring points, access roads, landfill gas system, and site security. The plan will be implemented for a minimum period of 30 years or until the waste no longer poses a threat to environmental quality, whichever is greater.
73. Once every five years during the post-closure maintenance period, aerial photographic maps of the closed landfill area will be made to identify and evaluate landfill settlement. Iso-settlement maps will be prepared to determine the amount of differential settlement occurring over the previous five years. This Order requires iso-settlement maps to be prepared and submitted every five years.
74. The completed final cover will be periodically tested for damage or defects by monitoring surface emissions pursuant to CCR Title 17 Section 95471(c) and Title 27 Section 21090(a)(4)(A). Defects will be repaired and tested for adequacy based on the closure CQA Plan.

### **FINANCIAL ASSURANCES**

75. Title 27 Section 21820(a)(1) requires closure cost estimates to equal the cost of closing the landfill at the point in its active life when the extent and manner of operation would make closure the most expensive. When closing units in phases, the estimate may account for closing only the maximum area or unit of a landfill open at any time.
76. The Discharger submitted a 26 June 2008 letter updating the closure cost estimate in the 9 June 2005 *Preliminary Closure and Post Closure Maintenance Plan*. The updated lump sum estimate is for the cost to close future Phase III-B and Phase IV which will be the largest area needing closure at any one time. The total amount of the closure cost estimate in 2008 dollars is \$14.2 million. This Order requires that the Discharger maintain financial assurance with the California Department of Resources Recycling and Recovery (CalRecycle) in at least the amount of the updated closure cost estimate.

77. The 26 June 2008 letter also included an updated cost estimate to carry out 30 years of post-closure maintenance. The amount of the cost estimate for post-closure maintenance is \$4.8 million. This Order requires that the Discharger maintain financial assurance with CalRecycle in at least the amount of the post-closure maintenance cost estimate.
78. During 1993, the Discharger estimated costs for corrective action of all known or reasonably foreseeable releases at \$300,000. The cost estimate has been adjusted annually for inflation since that time and as of 2009 is \$422,028.07. This Order requires that the Discharger maintain financial assurance with the CalRecycle in at least the amount of the annual inflation-adjusted cost estimate.

### **CEQA AND OTHER CONSIDERATIONS**

79. On 6 July 1989, the Calaveras County Planning Commission adopted a final environmental impact report (EIR) on the project, in accordance with the California Environmental Quality Act (Public Resources Code Section 21000, et. Seq.), and the State Guidelines. The project of developing the Rock Creek landfill and surface impoundment, as approved by the Planning Commission, will not have significant impacts on water quality. The Central Valley Water Board reviewed the EIR and concurred with the Planning Commission.
80. On 18 October 2010, the Calaveras County Department of Public Works issued a Notice of Exemption for the Phase I closure project at the landfill. The Notice of Exemption states that the project is exempt from CEQA pursuant to Public Resources Code Section 21080(b) and CCR Title 14 Section 15268 since it is a ministerial action that implements the requirements of facility permits and Title 27 for the closure of solid waste landfills.
81. This order implements:
- a. *The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition;*
  - b. The prescriptive standards and performance goals of Chapters 1 through 7, Subdivision 1, Division 2, Title 27, of the California Code of Regulations, effective 18 July 1997, and subsequent revisions;
  - c. The prescriptive standards and performance criteria of RCRA Subtitle D, Part 258; and
  - d. State Water Resources Control Board Resolution No. 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*, adopted 17 June 1993, and revised on 21 July 2005.
82. Section 13267(b) of California Water Code provides that: "In conducting an investigation specified in subdivision (a), the Regional Board may require that any person who has

discharged, discharges, or is suspected of having discharge or discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. The monitoring and reporting program required by this Order and the attached "Monitoring and Reporting Program No. R5-2011-0029" are necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharges the waste subject to this Order.

83. The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2011-0029" are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

### **PROCEDURAL REQUIREMENTS**

84. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.
85. The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
86. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.
87. Any person affected by this action of the Central Valley Water Board may petition the State Water Resources Control Board to review the action in accordance with Sections 2050 through 2068, Title 23, California Code of Regulations. The petition must be received by the State Water Resources Control Board, Office of Chief Counsel, P.O. Box 100, Sacramento, California 95812, within 30 days of the date of issuance of this Order. Copies of the laws and regulations applicable to the filing of a petition are available on the Internet at [http://www.swrcb.ca.gov/water\\_laws/index.html](http://www.swrcb.ca.gov/water_laws/index.html) and will be provided on request.

IT IS HEREBY ORDERED, pursuant to Sections 13263 and 13267 of the California Water Code, that Order No. R5-2005-0100 is rescinded, and that Calaveras County Department of



Public Works, its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

## **A. PROHIBITIONS**

1. The discharge of 'hazardous waste' is prohibited. For the purposes of this Order, the term 'hazardous waste' is as defined in California Code of Regulations Title 23 Section 2510 et seq.
2. The discharge of wastes outside of a Unit or portions of a Unit specifically designed for their containment is prohibited.
3. The discharge to the facility of liquid or semi-solid waste (i.e. waste containing less than 50 percent of solids), except dewatered sewage, water treatment sludge, or leachate for dust control in lined landfill areas as provided in Title 27 Sections 20200(d), 20220(c), and 20340(g), is prohibited.
4. The discharge of solid waste containing free liquid or which may contain liquid in excess of the moisture holding capacity as a result of waste management operations, compaction or settlement is prohibited.
5. The discharge of waste from the Class II surface impoundment, except for use for dust control in the lined Class II landfill areas, is prohibited.
6. Except for the Class II surface impoundment, the discharge of waste to ponded water from any source is prohibited.
7. The discharge of waste within 50 feet of surface waters is prohibited.
8. The discharge of waste to a closed Unit is prohibited.
9. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited.
10. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.
11. The discharge of wastes, which have the potential to reduce or impair the integrity of the containment structures or which, if commingled with other wastes in the unit that could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products which in turn:
  - a. Require a higher level of containment other than provided by the unit,

- b. Are “restricted hazardous wastes”, or
- c. Impair the integrity of containment structures, is prohibited.

## **B. DISCHARGE SPECIFICATIONS**

1. Wastes shall be discharged only into waste management units (WMUs) specifically designed for their containment and/or treatment, as described in this Order. Class II landfills shall include liner systems which prevent the movement of fluid, including waste and leachate from the waste management units, to waters of the State so long as such waste poses a threat to water quality.
2. The discharge shall remain within the designated disposal area at all times.
3. During wet weather conditions, the facility shall be operated and graded to minimize leachate generation.
4. The discharge of liquid wastes to the surface impoundment is limited to leachate from the landfill units, surface impoundment LCRSs, subdrain beneath the toe of Phase II-A, subdrain for Phase II-B, landfill gas condensate, or leachate contact water from the landfill units and surface impoundment LCRSs.

## **C. FACILITY SPECIFICATIONS**

1. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order. If the Discharger is unable to remove and relocate the waste, the Discharger shall submit a report to the Regional Water Board explaining how the discharge occurred, why the waste cannot be removed, and any updates to the waste acceptance program necessary to prevent re-occurrence. If the waste is a hazardous waste, the Discharger shall immediately notify the Department of Toxic Substances Control.
2. The Discharger shall immediately notify the Central Valley Water Board of any flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
3. Water used for facility maintenance shall be limited to the minimum amount necessary for dust control, and construction. Liquid from the Class II surface impoundments shall only be used for dust control in composite lined Class II landfill areas. Therefore, leachate shall not be used for dust control in the Phase I-A area.

4. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
5. Methane and other landfill gases shall be adequately vented, removed from landfill units, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, degradation, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.
6. Surface drainage within the waste management facility shall either be contained on-site or be discharged in accordance with applicable storm water regulations.
7. The Discharger shall maintain a *Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements* in accordance with State Water Resources Control Board Order No. 97-03-DWQ, or retain all storm water on-site.
8. A minimum separation of five feet shall be maintained between waste or leachate and the highest anticipated elevation of groundwater including the capillary fringe.
9. The LCRS for each Class II unit shall be operated and maintained to collect twice the anticipated daily volume of leachate generated by the WMU and to prevent the buildup of hydraulic head on the underlying liner at any time. The depth of fluid in the LCRS sump shall be kept at the minimum needed to ensure efficient pump operation.
10. The depth of the fluid in the leachate sump of the Class II units shall be kept at the minimum needed for efficient pump operation (given the pump intake height and cycle frequency), and leachate shall not back up onto the liner system outside of the sump area. The Discharger shall notify the Central Valley Water Board in writing within seven days in the event leachate backs up onto the liner system outside of the sump area and shall include a timetable for remedial or corrective action.
11. If monitoring reveals leachate generation such that the depth of fluid on any portion of the LCRS (excluding the leachate removal pump sump) exceeds 30 cm, the Discharger shall immediately notify the Central Valley Water Board in writing within seven days. The notification shall include a timetable for remedial or corrective action necessary to achieve compliance with the leachate depth limitation.
12. All groundwater domestic supply wells within 500 feet of a waste management unit (landfill or surface impoundment) shall be sealed or abandoned to the satisfaction of the Calaveras County Department of Environmental Health prior to the discharge of waste to the facility. A record of the sealing and/or abandonment of such wells shall be sent to the Central Valley Water Board and the State Department of Water Resources.

### **Surface Impoundment Specifications**

13. The surface impoundment shall be operated to maintain a freeboard of at least two feet at all times.
14. Any direct-line discharge to the surface impoundment shall have fail-safe equipment or operating procedures that include daily inspection and manual control of pumping systems during the wet weather seasons to prevent overfilling.
15. The surface impoundments shall be maintained to prevent scouring and/or erosion of the liner and other containment features at points of discharge to the impoundment and by wind-caused wave action at the waterline.
16. Leachate removed from the secondary containment of the surface impoundments shall be placed back into the surface impoundments.
17. The LCRS shall be designed and operated to function without clogging through the scheduled closure of the surface impoundments. The surface impoundments shall be equipped to facilitate annual testing to demonstrate proper operation as required by Title 27 Section 20340(d).
18. Sediment or solids that accumulate in the Class II surface impoundment shall be removed when necessary to maintain the designed storage capacity. Sludge and solids removal shall be accomplished in a manner that ensures the continued integrity of the liner and leachate collection system in accordance with the facility's operations plan. Prior to disposal of these solids, sufficient samples shall be taken for their characterization and classification pursuant to Title 27. Central Valley Water Board staff shall be notified at least 30 days prior to removal of sediment and solids from the Class II surface impoundment.
19. Following sediment/solids removal from the Class II surface impoundment, the liner system shall be inspected for damage within 30 days and any damage shall be repaired within 60 days prior to the discharge of additional wastewater. A report shall be submitted to the Central Valley Water Board within 30 days of completion of the liner inspection or repair.

### **D. CONSTRUCTION SPECIFICATIONS**

1. The Discharger shall submit for review and approval **prior to** construction of new waste management units, design plans and specifications that include the following:
  - a. A Construction Quality Assurance Plan meeting the requirements of CCR Title 27 Section 20324; and

- b. A geotechnical evaluation of the area soils, evaluating their use as the base layer;  
and
  - c. An unsaturated zone monitoring system, which is demonstrated to remain effective throughout the active life, closure, and postclosure maintenance periods of the Unit, which shall be installed beneath the composite liner system in accordance with CCR Title 27 Section 20415(d).
2. The base liner and side slope liner of new Class II landfill units shall be constructed in accordance with the following approved engineered alternative liner design:
- a. An engineered alternative double composite base liner system that is comprised, in ascending order, of the following:
    - 1) A twelve inch thick engineered soil foundation layer that shall be constructed of select fine grained soil materials which shall be compacted in lifts of six inches or less to 90% of maximum dry density and at 0% to 4% wet of optimum moisture content and compacted to attain a hydraulic conductivity or  $1 \times 10^{-5}$  cm/sec or less or meet the following gradation criteria:
      - a) A maximum size of 3/8-inch particle size;
      - b) At least 30% of the material, by dry weight, passing the No. 200 U.S. Standard sieve;
    - 2) A 60-mil thick HDPE geomembrane.
    - 3) A geocomposite drainage layer.
    - 4) A GCL that shall exhibit appropriate strength characteristics (hydrated) to accommodate stresses associated with specific landfill design parameters, with particular attention to interface, long-term creep shear and bearing capacity and have a maximum hydraulic conductivity of  $5 \times 10^{-9}$  cm/sec.
    - 5) A 60-mil thick HDPE geomembrane.
    - 6) A 9-inch thick gravel drainage layer.
    - 7) An 8-ounce per square yard non-woven geotextile filter.
    - 8) A 15-inch thick operations layer.
    - 9) A leak location survey shall be conducted on the liner system after the installation of the operations layer and all leaks will be repaired before any waste is discharged into the new unit.

- b. The side slope liner shall be constructed with an engineered alternative composite liner that is comprised in ascending order, of the following:
  - 1) A prepared soil foundation layer that shall be constructed to be a smooth surface and free from rocks, sticks, and other debris that could damage or otherwise limit the performance of the geomembrane.
  - 2) A GCL that shall exhibit appropriate strength characteristics (hydrated) to accommodate stresses associated with specific landfill design parameters, with particular attention to interface, long-term creep shear and bearing capacity and have a maximum hydraulic conductivity of  $5 \times 10^{-9}$  cm/sec.
  - 3) A 60-mil thick HDPE geomembrane.
  - 4) 24-inch thick soil operations layer.
3. The Discharger may propose changes to the liner system design prior to construction, provided that approved components are not eliminated, the engineering properties of the components are not substantially reduced, and the proposed liner system results in the protection of water quality equal to or greater than the design prescribed by Title 27 and this Order. The proposed changes may be made following approval by the Executive Officer. Substantive changes to the design require reevaluation as an engineered alternative and approval by the Central Valley Water Board.
4. If the Discharger proposes to construct a liner system in which a GCL is placed on top of a subgrade, the subgrade for the bottom and the side slopes of the Unit shall be prepared in an appropriate manner using accepted engineering and construction methods so as to provide a smooth surface that is free from rocks, sticks, or other debris that could damage or otherwise limit the performance of the GCL.
5. Class II surface impoundments shall be constructed in accordance with the following liner design, in ascending order:
  - a. A GCL that shall have a maximum hydraulic conductivity of  $5 \times 10^{-9}$  cm/sec.
  - b. A 60-mil HDPE geomembrane.
  - c. A gravel or geocomposite LCRS layer.
  - d. A 60-mil HDPE geomembrane.
6. Construction shall proceed only after all applicable construction quality assurance plans have been approved.

7. Following the completion of construction of a Unit or portion of a Unit, and prior to discharge onto the newly constructed liner system, the final documentation required in CCR Title 27 Section 20324(d)(1)(C) shall be submitted for review and approval. The report shall be certified by a California-registered civil engineer or a certified engineering geologist. It shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, and with the prescriptive standards and performance goals of Title 27.
8. A third party independent of both the Discharger and the construction contractor shall perform all of the construction quality assurance monitoring and testing during the construction of a liner system.
9. All containment systems shall include a LCRS that shall convey all leachate which reaches the base liner system to an appropriately lined sump or other appropriately lined collected area. The LCRS shall not rely on unlined or clay lined areas for such conveyances.

#### **E. CLOSURE SPECIFICATIONS**

1. Upon closure, the Class II landfill units shall be closed with an engineered alternative final cover consisting of the following components or layers, from bottom to top:
  - a) 18-inch thick soil foundation layer.
  - b) 40-mil linear low density polyethylene (LLDPE) geomembrane, textured on both sides.
  - c) Geocomposite drainage layer.
  - d) 18-inch thick soil vegetative/erosion resistant layer.
2. Landfill side slopes shall be closed at steepness of 3:1 or less, and top deck areas shall be sloped at three percent or greater.
3. The landfill shall be closed with minimum 12-foot wide benches every 50 vertical feet.
4. An active landfill gas extraction system shall be installed during landfill closure.
5. The edges of the final cover shall be sealed either by connecting the cover geomembrane to the liner geomembrane or by constructing an anchor trench as described in the October 2010 *Phase I Partial Final Closure and Postclosure Maintenance Plan*.
6. Critical final cover interfaces shall be tested in a laboratory to ensure minimum design shear strengths shown in Table 1 of the January 2010 slope stability report and displacement of less than 3 inches are achieved.

7. Drainage features shall be designed for the 1,000-year 24-hour storm event and include perimeter concrete and grass-lined v-ditches and minimum 12-foot wide drainage benches.
8. The vegetative soil layer shall be fertilized, seeded with a binder, and stabilized with wood mulch in the upper six inches. Straw wattles shall be installed at least every 10 vertical feet.
9. At least 120 days prior to closure of landfill areas beyond the Phase I closure area described in the October 2010 *Phase I Partial Final Closure and Postclosure Maintenance Plan*, the Discharger shall submit a final closure and post-closure maintenance plan or partial final closure and post-closure maintenance plan that complies with the requirements of this Order for review and approval for the units or portion of units to be closed.
10. At closure, the Class II surface impoundment shall be clean closed by removing all liner material and any contaminated material beneath the liner system.
11. At least 120 days prior to closure of the Class II surface impoundment, the Discharger shall submit a final closure plan for review and approval.

#### **F. POST CLOSURE MAINTENANCE SPECIFICATIONS**

1. Closed landfill areas shall be inspected, maintained, and monitored during the post-closure maintenance period in accordance with the applicable approved post-closure maintenance plan. Inspection and maintenance shall include the condition of the final cover, drainage features, LCRS, groundwater monitoring wells, unsaturated zone monitoring points, access roads, and landfill gas system.
2. The completed final cover shall be periodically tested for damage or defects by monitoring surface emissions. Defects shall be repaired and tested for adequacy based on the applicable closure CQA Plan.
3. Landfill gas shall be extracted from closed landfill units until such time that it is no longer a threat to water quality.
4. Once every five years during the post-closure maintenance period, aerial photographic maps of the closed landfill area shall be made to identify and evaluate landfill settlement. Iso-settlement maps shall be prepared to determine the amount of differential settlement occurring over the previous five years, and shall be submitted to the Central Valley Water Board.
5. Post-closure maintenance shall be conducted for a minimum period of 30 years or until the waste no longer poses a threat to environmental quality, whichever is greater.



## G. DETECTION MONITORING SPECIFICATIONS

1. The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, and in accordance with Monitoring and Reporting Program No. R5-2011-0029. A detection monitoring program for a new Unit shall be installed, operational, and one year of monitoring data collected prior to the discharge of wastes [Title 27 CCR Section 20415(e)(6)].
2. The Discharger shall provide Regional Water Board staff a minimum of **one week** notification prior to commencing any field activities related to the installation, repair, or abandonment of monitoring devices.
3. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, Monitoring and Reporting Program No. R5-2011-0029, and the Standard Provisions and Reporting Requirements, dated April 2000.
4. The Water Quality Protection Standard for organic compounds which are not naturally occurring and not detected in background groundwater samples shall be taken as the detection limit of the analytical method used (i.e., US-EPA methods 8260 and 8270). The repeated detection of one or more non-naturally occurring organic compounds in samples above the Water Quality Protection Standard from detection monitoring wells is evidence of a release from the Unit.
5. The concentrations of the constituents of concern in waters passing the Point of Compliance shall not exceed the concentration limits established pursuant to Monitoring and Reporting Program No. R5-2011-0029.
6. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in Monitoring and Reporting Program No. R5-2011-0029 and Title 27 CCR Section 20415(e).
7. The Discharger shall establish and maintain a Sample Collection and Analysis Plan. The Sample Collection and Analysis Plan shall at a minimum include:
  - a. Sample collection procedures describing purging techniques, sampling equipment, and decontamination of sampling equipment;
  - b. Sample preservation information and shipment procedures;
  - c. Sample analytical methods and procedures;
  - d. Sample quality assurance/quality control (QA/QC) procedures; and
  - e. Chain of Custody control.

8. For any given monitored medium, the samples taken from all monitoring points and background monitoring points to satisfy the data analysis requirements for a given reporting period shall all be taken **within a span not to exceed 30 days**, unless a longer time period is approved, and shall be taken in a manner that ensures sample independence to the greatest extent feasible. Specific methods of collection and analysis must be identified. Sample collection, storage, and analysis shall be performed according to the most recent version of USEPA Methods, such as the latest editions, as applicable, of: (1) Methods for the Analysis of Organics in Water and Wastewater (USEPA 600 Series), (2) Test Methods for Evaluating Solid Waste (SW-846, latest edition), and (3) Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020), and in accordance with the approved Sample Collection and Analysis Plan.
9. If methods other than USEPA-approved methods or Standard Methods are used, the exact methodology shall be submitted for review and approval prior to use.
10. The **methods of analysis and the detection limits** used must be appropriate for the expected concentrations. For the monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., "trace" or "ND") in data from background monitoring points for that medium, the analytical method having the lowest method detection limit (MDL) shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.
11. **"Trace" results** - results falling between the MDL and the practical quantitation limit (PQL) - shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run.
12. **MDLs and PQLs** shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. These MDLs and PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than simply being quoted from USEPA analytical method manuals. In relatively interference-free water, laboratory-derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs.
13. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived MDL/PQL values, the results shall be flagged accordingly, along with estimates of the detection limit and quantitation limit actually achieved. The **MDL shall always be calculated such that it represents the lowest achievable concentration associated with a 99% reliability of a nonzero result**. The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents

the constituent's actual concentration in the sample. Normally, PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.

14. All **QA/QC data** shall be reported, along with the sample results to which they apply, including the method, equipment, analytical detection and quantitation limits, the percent recovery, an explanation for any recovery that falls outside the QC limits, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and qualifications of the person(s) performing the analyses. Sample results shall be reported unadjusted for blank results or spike recoveries. In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged.
15. Unknown chromatographic peaks shall be reported, flagged, and tracked for potential comparison to subsequent unknown peaks that may be observed in future sampling events. Identification of unknown chromatographic peaks that recur in subsequent sampling events may be required.
16. The statistical method shall account for data below the practical quantitation limit (PQL) with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to Title 27 CCR Section 20415(e)(7) that is used in the statistical method shall be **the lowest concentration (or value) that can be reliably achieved** within limits of precision and accuracy specified in the WDRs for routine laboratory operating conditions that are available to the facility. The Discharger's technical report, pursuant to Title 27 CCR Section 20415(e)(7), shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, CCR, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or downgradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a "trace" detection) shall be identified and used in appropriate statistical or nonstatistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory's concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of "ties".
17. Background for water samples or soil-pore gas samples shall be represented by the data from all samples taken from applicable background monitoring points during that reporting period (at least one sample from each background monitoring point). The Discharger may propose an alternate statistical method [to the methods listed under Title 27 CCR Section 20415(e)(8)(A-D)] in accordance with Title 27 CCR Section 20415(e)(8)(E), for review and approval.

18. The Discharger may propose an alternate statistical method [to the methods listed under Title 27 CCR Section 20415(e)(8)(A-D)] in accordance with Title 27 CCR Section 20415(e)(8)(E), for review and approval. Upon receiving written approval, alternate statistical procedures may be used for determining the significance of analytical results for common laboratory contaminants (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate). Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Central Valley Water Board staff.
19. The Discharger shall use the following non-statistical method for all analytes that are detected in less than 10% of the background samples. The non-statistical method shall be implemented as follows:
  - a. From the constituent of concern or monitoring parameter list, identify each analyte in the **current** sample that exceeds either its respective MDL or PQL. The Discharger shall conclude that the exceedance provides a preliminary indication of a release or a change in the nature or extent of the release, at that monitoring point, if **either**:
    - 1) The data contains two or more analytes that are detected in less than 10% of background samples that equal or exceed their respective MDLs; or
    - 2) The data contains one or more analyte that equals or exceeds its PQL.
  - b. **Discrete Retest** [Title 27 CCR Section 20415(e)(8)(E)]:
    - 1) In the event that the Discharger concludes (pursuant to paragraph 20.a., above) that there is a preliminary indication of a release, then the Discharger shall immediately notify Central Valley Water Board staff by phone or e-mail and, within 30 days of such indication, shall collect two new (retest) samples from the monitoring point where the release is preliminarily indicated.
    - 2) For any given retest sample, the Discharger shall include, in the retest analysis, **only the laboratory analytical results for those analytes detected in the original sample**. As soon as the retest data are available, the Discharger shall conclude that there is measurably significant evidence of a release if two or more analytes equal or exceed their respective MDLs or if one or more analyte equals or exceeds its PQL and shall:
      - a) **Immediately** notify the Central Valley Water Board about any constituent or constituents verified to be present at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of validation; and

- b) Comply with ¶20, below if any constituent or constituents were verified to be present.
  - 3) Any analyte that triggers a discrete retest per this method shall be added to the monitoring parameter list such that it is monitored during each regular monitoring event.
20. If the Discharger determines that there is measurably significant evidence of a release from the Unit at any monitoring point, the Discharger shall **immediately** implement the requirements of **XI. Response To A Release, C. Release Has Been Verified**, contained in the Standard Provisions and Reporting Requirements.

## H. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the facility and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.
2. The Discharger shall comply with all applicable provisions of Title 27 and 40 Code of Federal Regulations Part 258 (Subtitle D) that are not specifically referred to in this Order.
3. The Discharger shall comply with Monitoring and Reporting Program No. R5-2011-0029, which is incorporated into and made part of this Order.
4. The Discharger shall comply with the applicable portions of the Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Title 27 and/or Subtitle D (Title 27 CCR Section 20005 et seq. and 40 CFR 258 et seq.), dated April 2000, which are hereby incorporated into this Order.
5. In the event the Discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Discharger shall notify the appropriate Central Valley Water Board office by telephone **as soon as** it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing **within two weeks**. The written notification shall state the nature, time, and cause of noncompliance, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.
6. All reports and transmittal letters shall be signed by persons identified below:
  - a. For a corporation: by a principal executive officer of at least the level of senior vice-president.

- b. For a partnership or sole proprietorship: by a general partner or the proprietor.
  - c. For a municipality, state, federal or other public agency: by either a principal executive officer or ranking elected or appointed official.
  - d. A duly authorized representative of a person designated in a, b or c above if;
    - 1) The authorization is made in writing by a person described in a, b, or c of this provision;
    - 2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a Unit, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
    - 3) The written authorization is submitted to the Central Valley Water Board.
  - e. Any person signing a document under this Section shall make the following certification:

“I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”
- 7. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.
  - 8. The owner of the waste management facility shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and from gases and leachate generated by discharged waste during the active life, closure, and postclosure maintenance period of the Unit(s) and during subsequent use of the property for other purposes.
  - 9. The fact that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order shall not be regarded as a defense for the Discharger's violations of the Order.

10. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Central Valley Water Board requesting transfer of the Order within 14 days of assuming ownership or operation of this facility. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory requirements contained in Provision F.6. and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer of this Order shall be approved or disapproved by the Central Valley Water Board.
11. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for closure and post-closure maintenance for the landfill in the amounts described in Findings 76 and 77, adjusted for inflation annually. All reports to CalRecycle regarding financial assurances for closure and post-closure maintenance shall be copied to the Central Valley Water Board by **1 June** of each year.
12. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill in the amount of the annual inflation-adjusted cost estimate described in Finding 78. All reports to CalRecycle regarding financial assurances for corrective action shall be copied to the Central Valley Water Board by **1 June** of each year.
13. All reports required by this Order shall be submitted pursuant to California Water Code Section 13267.
14. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:

Task	Compliance Date
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**A. Construction Plans**

Submit construction and design plans for approval (see Construction Specification D.1) including updated detection monitoring programs for groundwater, unsaturated zone, and leachate monitoring.	At least 120 days prior to Construction
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Task	Compliance Date
<b>B. Construction Report</b>	
Submit a construction report for review and approval upon completion of new liner construction demonstrating construction was in accordance with approved construction plans. (see Construction Specification D.7). Discharge to new lined areas may not commence until the report has been reviewed and approved.	Prior to Discharge

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 8 April 2011.

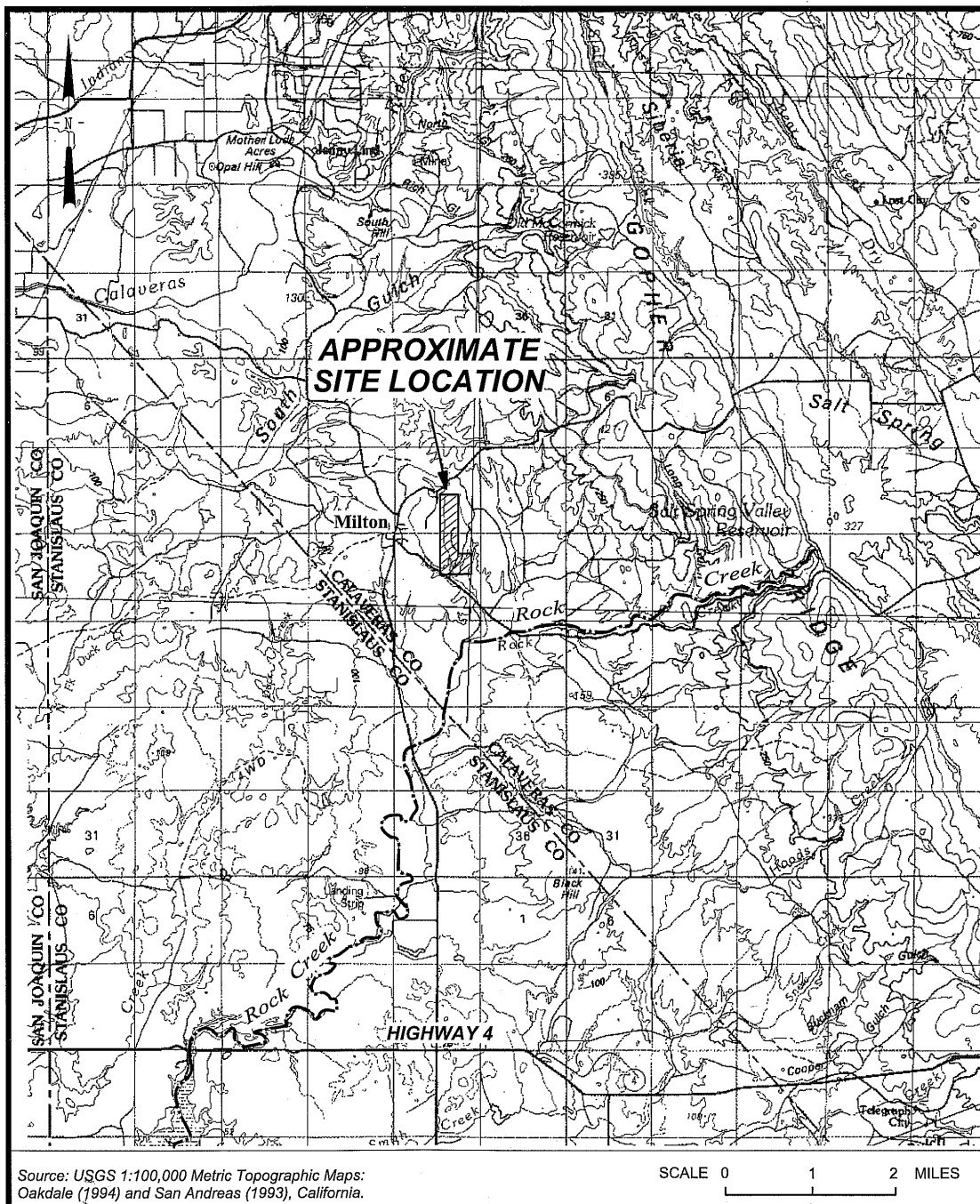
Original signed by

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PAMELA C. CREEDON, Executive Officer

WLB





ROCK CREEK SOLID WASTE FACILITY  
CALAVERAS COUNTY, CALIFORNIA

SITE LOCATION

FIGURE

1

PROJECT NO.  
053-7495-08

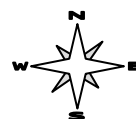
G:\053-7495-08\FIGURES\SITELOC 2.DSF 1/27/09

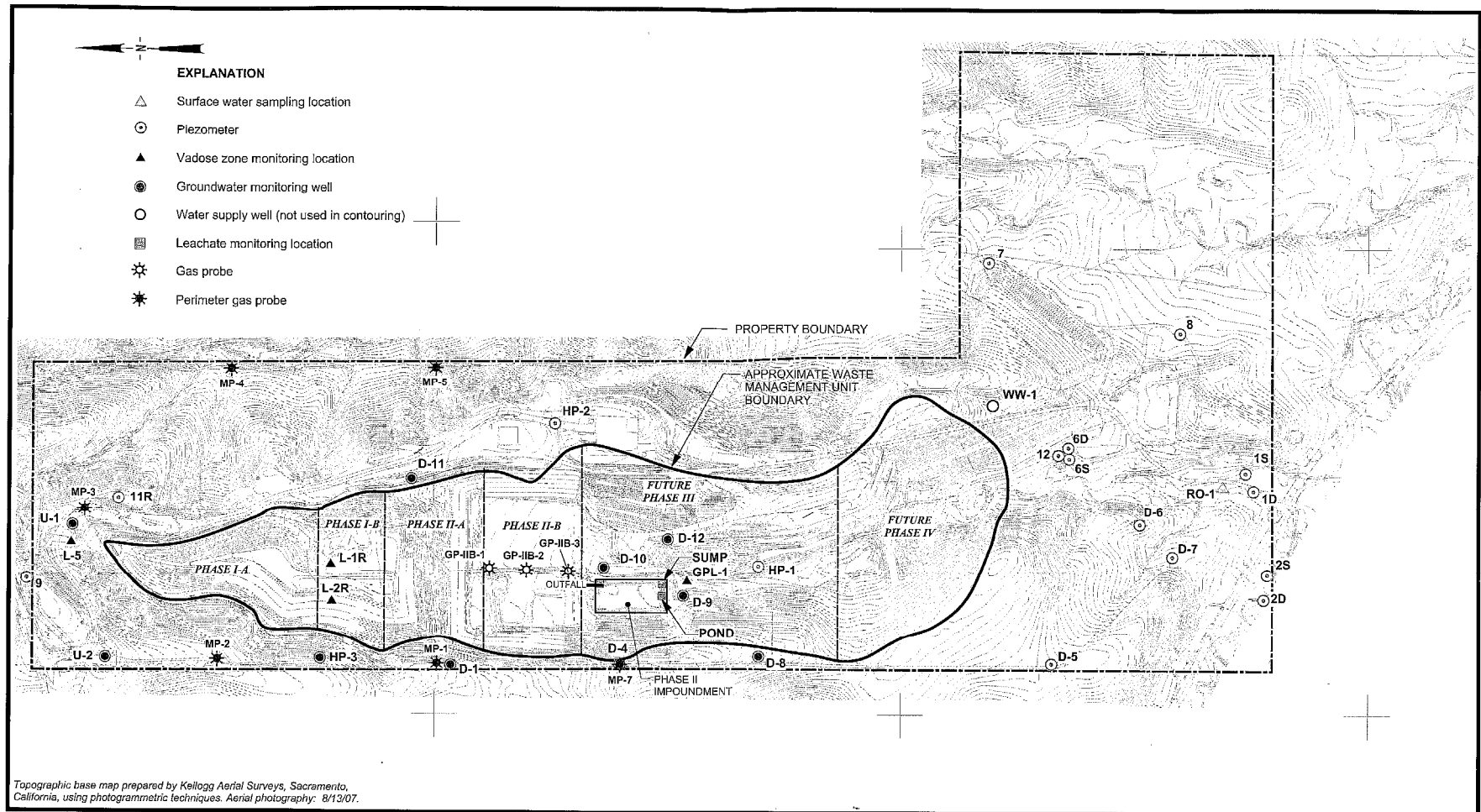
### Drawing Reference:

Golder Associates,  
30 January 2009 2008  
Second Semi-Annual and  
Annual Monitoring Report,  
Figure 1

### SITE LOCATION MAP

Rock Creek Solid Waste Facility  
Class II Landfill and Class II Surface Impoundment  
Calaveras County





Topographic base map prepared by Kellogg Aerial Surveys, Sacramento, California, using photogrammetric techniques. Aerial photography: 8/13/07.

SCALE: 0                      400                      800 FEET

ROCK CREEK SOLID WASTE FACILITY  
CALAVERAS COUNTY, CALIFORNIA

## MONITORING SYSTEMS

PLATE  
3

from Golder, 2010.

Drawing Reference:  
October 2010 *Phase I Partial Final Closure  
and Postclosure Maintenance Plan*, Plate 3

## SITE PLAN

Rock Creek Solid Waste Facility  
Class II Landfill and Class II Surface Impoundment  
Calaveras County

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2011-0029  
FOR  
CALAVERAS COUNTY DEPARTMENT OF PUBLIC WORKS  
ROCK CREEK SOLID WASTE FACILITY  
CLASS II LANDFILL  
CLASS II SURFACE IMPOUNDMENT  
CONSTRUCTION, OPERATION, CLOSURE, AND POST-CLOSURE MAINTENANCE  
CALAVERAS COUNTY

The Discharger shall comply with this Monitoring and Reporting Program, with California Code of Regulations Title 27 Section 20005, et seq. (hereafter Title 27), and with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Title 27 and/or Subtitle D (CCR Title 27 §20005 et seq. and 40 CFR 258)*, dated April 2000, as ordered by Waste Discharge Requirements Order No. R5-2011-0029.

**A. MONITORING**

The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, in accordance with Detection Monitoring Specifications in section G of Waste Discharge Requirements, Order No. R5-2011-0029. All monitoring shall be conducted in accordance with the 2008 or subsequently approved Sample Collection and Analysis Plan, which includes quality assurance/quality control standards.

All compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard. All detection monitoring program groundwater monitoring wells, unsaturated zone monitoring devices, leachate, and surface water monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern (COCs) as indicated and listed in Tables I through IV. Metals shall be analyzed in accordance with the methods listed in Table VI.

The Discharger may use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program.

**1. Groundwater**

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of §20415 and §20420 of Title 27 in accordance with an approved Detection Monitoring Program. The detection monitoring system shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27.

The current groundwater detection monitoring system meets the applicable requirements of Title 27, and the Discharger shall revise the system as needed each time the landfill expands (Phases III and IV).

Groundwater samples shall be collected from the compliance wells, background wells, and any additional wells added as part of the approved groundwater monitoring system. Samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table I. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

The groundwater monitoring network shall consist of the following:

<u>Well</u>	<u>Status</u>	<u>Function</u>
U-1	Background	
U-2	Background	
HP-3	Detection	Phase I-A
D-1	Detection/Evaluation	Phase I-A, Phase I-B, Phase II-A
D-4	Detection	Phase I-B, Phase II-A, Phase II-B
D-8	Detection	SI, Phase II-A, Phase II-B
D-9	Detection	SI, Phase I-B, Phase II-A, Phase II-B
D-10	Detection	Phase II-A, Phase II-B
D-11	Background	
D-12	Background/Detection	Phase II-A, Phase II-B, future Phase III

The Discharger shall determine the groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional zone of saturation monitored pursuant to this Monitoring and Reporting Program **quarterly**, and report the results semiannually, including the times of highest and lowest elevations of the water levels in the wells.

Samples collected for the COC monitoring specified in Table I shall be collected and analyzed in accordance with the methods listed in Table VI every five years. Five-year COCs were last monitored in 2007 and shall be monitored again in **2012**.

## **2. Unsaturated Zone Monitoring**

The Discharger shall operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of §20415 and

§20420 of Title 27 in accordance with an approved Detection Monitoring Program. The current unsaturated zone detection monitoring system meets the applicable requirements of Title 27, and the Discharger shall revise the system as needed each time the landfill expands (Phases III and IV).

Unsaturated zone samples shall be collected from the monitoring devices and background monitoring devices of the unsaturated zone monitoring system. The collected samples shall be analyzed for the listed constituents in accordance with the methods and frequency specified in Table II. The Discharger shall collect, preserve, and transport samples in accordance with the quality assurance/quality control standards contained in the approved Sample Collection and Analysis Plan. Samples collected for the COC analyses specified in Table II shall be collected and analyzed in accordance with the methods listed in Table VI every five years, beginning again in **2012**.

The unsaturated zone monitoring network shall consist of background suction lysimeter L-5 and downgradient monitoring lysimeters L-1R and L-2R (suction lysimeters), GPL-1 (pan lysimeter located beneath sump of surface impoundment), SD-1 (subdrain located beneath Phase II-A), SD-2 (subdrain located beneath east sideslope of Phase II-A and beneath Phase II-B), and GP-IIB-1, GP-IIB-2 and GP-IIB-3 (gas probes beneath Phase II-B secondary liner).

The pan lysimeter, GPL-1, shall be checked monthly for liquid and monitoring shall also include the total volume of liquid removed from the system. Unsaturated zone monitoring reports shall be included with the corresponding semiannual groundwater monitoring and shall include an evaluation of potential impacts of the facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

### **3. Leachate/Seep Monitoring**

All leachate collection and removal system sumps shall be inspected monthly for leachate generation. Upon detection of leachate in a previously dry leachate collection and removal system, leachate shall be sampled **immediately** and analyzed for the constituents listed in Table III. Leachate shall then be sampled and analyzed in accordance with the frequencies listed in Table III whenever liquid is present.

Leachate samples shall be collected and analyzed for the listed constituents in accordance with the methods and frequency specified in Table III. The COCs list shall include all constituents listed in Table VI. The quantity of leachate pumped from each sump shall be measured monthly as Leachate Flow Rate (in gallons). Samples shall be collected from the primary and secondary LCRS (Phase II-A and Phase II-B), the LCRS at the point of discharge to the surface impoundment (outfall), surface impoundment (pond) and the surface

impoundment sump.

Leachate that seeps to the surface from a landfill unit shall be sampled and analyzed for the Monitoring Parameters and COCs listed in Table III upon detection. The quantity of leachate shall be *estimated* and reported as Leachate Flow Rate (in gallons/day). Also, refer to Section B.4, below.

All LCRSs shall be tested annually to demonstrate operation in conformance with waste discharge requirements. The results of these tests shall be reported to the Central Valley Water Board and shall include comparisons with earlier tests made under comparable conditions. All visible portions of synthetic liners shall be inspected on a quarterly basis and their condition reported on a semiannual basis.

#### **4. Surface Water Monitoring**

The Discharger shall operate a surface water detection monitoring system where appropriate that complies with the applicable provisions of §20415 and §20420 of Title 27. The current surface water detection monitoring system meets the applicable requirements of Title 27.

For surface water detection monitoring, a sample shall be collected at the facility boundary from RO-1 and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table IV. All surface water monitoring samples shall be collected and analyzed for the COCs specified in Table IV every five years, beginning again in **2012**.

#### **5. Facility Monitoring**

##### **a. Facility Inspection**

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess damage to the drainage control system, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations contained in part "c" below. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. By **15 November** of each year, the Discharger shall submit an annual report describing the results of the inspection and the repair measures implemented, including photographs of the problem and the repairs.

##### **b. Storm Events**

The Discharger shall inspect all precipitation, diversion, and drainage facilities for damage **within 7 days** following *major storm events*. Necessary repairs shall be completed **within 30 days** of the inspection. The Discharger shall notify Central Valley Water Board staff of any damage within 7 days of discovery and report subsequent repairs within 45 days of completion of the repairs, including photographs of the problem and the repairs.

c. **Standard Observations**

A summary and certification of completion of all **Standard Observations** for the Unit(s), for the perimeter of the Unit, and for the receiving waters. Standard observations for ACTIVE landfill units shall be conducted **weekly** during the wet season (1 October to 30 April) and **monthly** during the dry season (1 May to 30 September). Standard observations for INACTIVE or CLOSED landfill units shall be conducted **monthly** during the wet season (1 October to 30 April) and **quarterly** during the dry season (1 May to 30 September). The Standard Observations shall include:

1) For the Unit:

- a) Evidence of ponded water at any point on the facility (show affected area on map);
- b) Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and
- c) Evidence of erosion and/or of day-lighted refuse.

2) Along the perimeter of the Unit:

- a) Evidence of liquid leaving or entering the Unit, estimated size of affected area, and flow rate (show affected area on map);
- b) Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and
- c) Evidence of erosion and/or of day-lighted refuse.

3) For receiving waters:

- a) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area;
- b) Discoloration and turbidity - description of color, source, and size of affected area;

- c) Evidence of odors - presence or absence, characterization, source, and distance of travel from source;
- d) Evidence of water uses - presence of water-associated wildlife;
- e) Flow rate; and
- f) Weather conditions - wind direction and estimated velocity, total precipitation on the day of observation.
- g) The quantity and types of wastes discharged and the locations in the Unit where waste has been placed since submittal of the last such report.

## **B. REPORTING**

### **Required Monitoring Reports**

<u>Report</u>	<u>Due</u>
1. Groundwater Monitoring (Section A.1)	<b>See Table I</b>
2. Annual Monitoring Summary Report (Section B.5)	<b>Annually</b>
3. Unsaturated Zone Monitoring (Section A.2)	<b>See Table II</b>
4. Leachate Monitoring (Section A.3)	<b>See Table III</b>
5. Surface Water Monitoring (Section A.4)	<b>See Table IV</b>
6. Facility Monitoring (Section A.5)	<b>As necessary</b>
7. Response to a Release (Standard Provisions and Reporting Requirements)	<b>As necessary</b>



### Reporting Schedule

<u>Sampling Frequency</u>	<u>Sampling Period Ends</u>	<u>Reporting Frequency</u>	<u>Report Date Due</u>
Monthly	Last Day of Month	Semiannually	<b>by Semiannual Schedule</b>
Quarterly	31 March	Semiannually	<b>by Semiannual Schedule</b>
	30 June	Semiannually	<b>by Semiannual Schedule</b>
	30 September	Semiannually	<b>by Semiannual Schedule</b>
	31 December	Semiannually	<b>by Semiannual Schedule</b>
Semiannually	30 June	Semiannually	<b>31 July</b>
	31 December	Semiannually	<b>31 January</b>
Annually	31 December	Annually	<b>31 January</b>
5-Year	31 December	Every 5 Years	<b>31 January</b>

The Discharger shall submit **semiannual** monitoring reports with the data and information as required in this Monitoring and Reporting Program and as required in Order No. R5-2011-0029 and the Standard Provisions and Reporting Requirements. In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format.

Field and laboratory tests shall be reported in each monitoring report. Semiannual and annual monitoring reports shall be submitted to the Central Valley Water Board in accordance with the above schedule for the calendar period in which samples were taken or observations made.

The results of **all monitoring** conducted at the site shall reported to the Central Valley Water Board in accordance with the reporting schedule above for the calendar period in which samples were taken or observations made.

### Reporting Requirements

1. The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records

shall be maintained throughout the life of the facility including the postclosure period.

Such legible records shall show the following for each sample:

- a) Sample identification and the monitoring point or background monitoring point from which it was taken, along with the identity of the individual who obtained the sample;
- b) Date, time, and manner of sampling;
- c) Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;
- d) Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
- e) Calculation of results; and
- f) Results of analyses, and the MDL and PQL for each analysis. All peaks shall be reported.

2. Each semiannual monitoring report shall contain at least the following:

- a) For each monitoring point and background monitoring point addressed by the report, a description of:
  - 1) The time of water level measurement;
  - 2) The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;
  - 3) The method of purging used to stabilize water in the well bore before the sample is taken including the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; results of pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water;
  - 4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
  - 5) A statement that the sampling procedure was conducted in accordance with the approved Sampling and Analysis Plan.
- b) A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
- c) The groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional zone of saturation monitored

based upon water level elevations taken prior to the collection of the water quality data submitted in the report.

- d) Hydrographs of each well showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly and submitted annually.
  - e) Cumulative tabulated monitoring data for all monitoring points and constituents.
  - f) Laboratory statements of results of all analyses evaluating compliance with requirements.
  - g) An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities.
3. The Discharger shall submit an **Annual Monitoring Summary Report** to the Central Valley Water Board covering the reporting period of the previous monitoring year. This report shall contain:
- a) All monitoring parameters shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. If a 5-year COC event was performed, then these parameters shall also be graphically presented. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot downgradient data. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
  - b) An evaluation of the monitoring parameters with regards to the cation/anion balance, and a graphical presentation using a Stiff diagram, a Piper graph, or a Schueller plot.
  - c) All historical monitoring data collected during the previous 5-years, and for which there are detectable results, including data for the previous year, shall be submitted in tabular form and in a digital file format. The Central Valley Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Title 27 CCR Section 20420(h)], that facilitates periodic review by the Central Valley Water Board.
  - d) A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.

- e) A map showing the area and elevations in which filling has been completed during the previous calendar year and a comparison to final closure design contours.
  - f) A written summary of the monitoring results, indicating any changes made or observed since the previous annual report.
  - g) An evaluation of the effectiveness of the leachate monitoring/control facilities including the results of the annual testing of leachate collection and removal systems required under VIII.P of the Standard Provisions and Reporting Requirements.
  - h) Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set.
4. The Discharger shall report by telephone any seepage from the disposal area **immediately** after it is discovered. A written report shall be filed with the Central Valley Water Board **within seven days**, containing at least the following information:
- a) A map showing the location(s) of seepage;
  - b) An estimate of the flow rate;
  - c) A description of the nature of the discharge (e.g., all pertinent observations and analyses);
  - d) Verification that samples have been submitted for analyses of the Monitoring Parameters and COCs listed in Table III of this MRP, and an estimated date that the results will be submitted to the Central Valley Water Board; and
  - e) Corrective measures underway or proposed, and corresponding time schedule.

## **C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD**

### **1. Water Quality Protection Standard Report**

For each waste management unit (Unit), the Water Quality Protection Standard shall consist of all COCs, the concentration limit for each constituent of concern, the point of compliance, and all water quality monitoring points for each monitored medium.

The Water Quality Protection Standard for naturally occurring waste constituents consists of the COCs, the concentration limits, and the point of compliance and all monitoring points. Any proposed changes to the Water Quality Protection Standard other than annual update of the concentration limits shall be submitted in a report for review and approval.

The report shall:

- a. Identify **all distinct bodies of surface and ground water** that could be affected in the event of a release from a Unit or portion of a Unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Include a map showing the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with §20405 of Title 27.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).

The Water Quality Protection Standard shall be certified by a California-registered civil engineer or geologist as meeting the requirements of Title 27. If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the Water Quality Protection Standard.

The Discharger proposed the methods for calculating concentration limits in the 27 February 2007 *Water Quality Protection Standard Report*. The limits are calculated using intrawell tolerance limits at 95% confidence and 95% coverage. Both interwell and intrawell analyses are used for well D-1. The concentration limits for the WQPS as reported in the 2010 *First Semiannual Monitoring Report* were as follows:

Well	Analysis Type	pH (Std units)	SC <sup>1</sup> (umhos/cm)	Chloride (mg/L)	Nitrate/Nitrite as N (mg/L)	Sulfate as SO <sub>4</sub> (mg/L)	TDS <sup>2</sup> (mg/L)
D-1	Interwell	6.3-7.8	983	13	10	225	637
D-1	Intrawell	6.2-7.5	413	14	10	89	289
D-4	Intrawell	6.0-7.2	643	12	2.4	208	432
D-8	Intrawell	6.0-7.3	794	14	2.3	305	664
D-9	Intrawell	6.3-7.8	256	5.9	2.4	19	227
D-10	Intrawell	6.8-7.5	336	12	5.8	42	253
D-11	Intrawell	7.1-8.0	855	117	2.2	49	456
D-12	Intrawell	6.6-7.6	296	6.0	2.7	38	279
HP-3	Intrawell	6.7-7.5	1050	13	2.7	96	692

<sup>1</sup> Specific Conductance

<sup>2</sup> Total Dissolved Solids

The Water Quality Protection Standard shall be updated annually for each monitoring well using new and historical monitoring data.

## **2. Constituents of Concern (COCs)**

The COCs include all the waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the Unit. The COCs for all Units at the facility are those listed in Tables I through IV for the specified monitored medium, and Table VI. The Discharger shall monitor all COCs every five years, or more frequently as required in accordance with a Corrective Action Program. The last five-year COC report was submitted to the Central Valley Water Board in the 2007 Annual Monitoring Report, and are due to be sampled again in 2012.

## **3. Monitoring Parameters**

Monitoring parameters are COCs that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a Unit. The monitoring parameters for all Units are those listed in Tables I through V for the specified monitored medium.

## **4. Concentration Limits**

For a naturally occurring constituent of concern, the concentration limit for each constituent of concern shall be determined as follows:

- a. By calculation in accordance with a statistical method pursuant to §20415 of Title 27(e)(8); or
- b. By an alternate statistical method meeting the requirements of §20415(e)(8)(E) of Title 27.

The methods for calculating concentration limits were included in the 27 February 2007 *Water Quality Protection Standard Report*. The proposed methods were using intrawell upper tolerance limits at 95% confidence and 95% coverage for all wells except D-1 where the interwell upper tolerance limit at 95% confidence and 95% coverage was proposed.

## **5. Point of Compliance**

The point of compliance for the water standard at each Unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit. The following are monitoring locations at the point of compliance:

Phase I-A:	L-1R, L-2R, HP-3
Phase I-B:	SD-1, SD-2, D-1
Phase II-A:	SD-1, SD-2, LDS-IIA, D-4, D-10
Phase II-B:	GP-IIB-1, GP-IIB-2, and GP-IIB-3, D-10, D-4, D-12
Phase III (future cell):	D-12
Surface Impoundment	GPL-1, D-8, D-9

## 6. Compliance Period

The compliance period for each Unit shall be the number of years equal to the active life of the Unit plus the closure period. The compliance period is the minimum period during which the Discharger shall conduct a water quality monitoring program subsequent to a release from the Unit. The compliance period shall begin anew each time the Discharger initiates an evaluation monitoring program.

## 7. Monitoring Points

A monitoring point is a well, device, or location specified in the waste discharge requirements, which monitoring is conducted and at which the water quality protection standard applies. The monitoring points for detection monitoring shall be the following (plus other monitoring points as :

Surface Water:	RO-1
Groundwater:	U-1, U-2, HP-3, D-1, D-4, D-8, D-9, D-10, D-11, D-12 (and other monitoring wells when constructed)
Vadose Zone:	L-1R, L-2R, L-5, GPL-1, SD-1, SD-2, GP-IIB-1, GP-IIB-2 and GP-IIB-3 (and other lysimeters when constructed)
Leachate:	Outfall, Pond, Sump, each secondary LCRS beneath Phase II-A and Phase II-B

A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report. The transmittal letter shall contain a statement by the discharger, or the discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate, and complete.

The Discharger shall implement the above monitoring program on the effective date of this Program.

Ordered by: \_\_\_\_\_  
PAMELA C. CREEDON, Executive Officer

\_\_\_\_\_  
8 April 2011  
(Date)

WLB



**TABLE I**  
**GROUNDWATER DETECTION MONITORING PROGRAM**

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<b>Field Parameters</b>			
Groundwater Elevation	Ft. & 100ths, M.S.L.	Quarterly	Semiannual
Temperature	°C	Semiannual	Semiannual
Electrical Conductivity	µmhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Turbidity	Turbidity units	Semiannual	Semiannual
<b>Monitoring Parameters</b>			
Total Dissolved Solids (TDS)	mg/L	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual	Semiannual
Sulfate	mg/L	Semiannual	Semiannual
Calcium	mg/L	Semiannual	Semiannual
Magnesium	mg/L	Semiannual	Semiannual
Potassium	mg/L	Semiannual	Semiannual
Sodium	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260, see Table V)	µg/L	Semiannual	Semiannual
<b>Constituents of Concern (see Table VI)</b>			
Total Organic Carbon	mg/L	5 years	31 January 2013
Inorganics (dissolved)	mg/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years	" "

**TABLE II**  
**UNSATURATED ZONE DETECTION MONITORING PROGRAM**

**SOIL-PORE GAS**

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<b>Monitoring Parameters</b>			
Volatile Organic Compounds (USEPA Method TO-14)	µg/cm <sup>3</sup>	Annual	Annual
Methane	%	Semiannual	Semiannual

**PAN LYSIMETERS (or other vadose zone monitoring device)**

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<b>Field Parameters</b>			
Electrical Conductivity	µmhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Volume of liquid removed	gallons	Monthly	Semiannual

**Monitoring Parameters**

Total Dissolved Solids (TDS)	mg/L	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual	Semiannual
Sulfate	mg/L	Semiannual	Semiannual
Calcium	mg/L	Semiannual	Semiannual
Magnesium	mg/L	Semiannual	Semiannual
Potassium	mg/L	Semiannual	Semiannual
Sodium	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	Semiannual	Semiannual

**Constituents of Concern (see Table VI)**

Total Organic Carbon	mg/L	5 years	31 January 2013
Inorganics (dissolved)	mg/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years	" "

**TABLE III**  
**LEACHATE/SEEP MONITORING PROGRAM AND LCRS TESTING**

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<b>Field Parameters</b>			
Total Flow	Gallons	Monthly	Semiannual
Flow Rate	Gallons/Day	Monthly	Semiannual
Electrical Conductivity	µmhos/cm	Monthly	Semiannual
pH	pH units	Monthly	Semiannual
<b>Monitoring Parameters</b>			
Total Dissolved Solids (TDS)	mg/L	Annually	Annually
Chloride	mg/L	Annually	Annually
Carbonate	mg/L	Annually	Annually
Bicarbonate	mg/L	Annually	Annually
Nitrate - Nitrogen	mg/L	Annually	Annually
Sulfate	mg/L	Annually	Annually
Calcium	mg/L	Annually	Annually
Magnesium	mg/L	Annually	Annually
Potassium	mg/L	Annually	Annually
Sodium	mg/L	Annually	Annually
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	Annually	Annually
<b>Constituents of Concern (see Table VI)</b>			
Total Organic Carbon	mg/L	5 years	31 January 2013
Inorganics (dissolved)	mg/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years	" "
<b>LCRS Testing</b>	---	Annually	Annually

**TABLE IV**  
**SURFACE WATER DETECTION MONITORING PROGRAM**

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<b>Field Parameters</b>			
Temperature	°C	Semiannual	Semiannual
Electrical Conductivity	µmhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Turbidity	Turbidity units	Semiannual	Semiannual
<b>Monitoring Parameters</b>			
Total Dissolved Solids (TDS)	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual	Semiannual
Sulfate	mg/L	Semiannual	Semiannual
Calcium	mg/L	Semiannual	Semiannual
Magnesium	mg/L	Semiannual	Semiannual
Potassium	mg/L	Semiannual	Semiannual
Sodium	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	Semiannual	Semiannual
<b>Constituents of Concern (see Table VI)</b>			
Total Organic Carbon	mg/L	5 years	31 January 2013
Inorganics (dissolved)	mg/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years	" "

## TABLE V

### MONITORING PARAMETERS FOR DETECTION MONITORING

#### Surrogates for Metallic Constituents:

pH  
Total Dissolved Solids  
Electrical Conductivity  
Chloride  
Sulfate  
Nitrate nitrogen

#### Constituents included in VOC:

##### **USEPA Method 8260B**

Acetone  
Acrylonitrile  
Benzene  
Bromochloromethane  
Bromodichloromethane  
Bromoform (Tribromomethane)  
Carbon disulfide  
Carbon tetrachloride  
Chlorobenzene  
Chloroethane (Ethyl chloride)  
Chloroform (Trichloromethane)  
Dibromochloromethane (Chlorodibromomethane)  
1,2-Dibromo-3-chloropropane (DBCP)  
1,2-Dibromoethane (Ethylene dibromide; EDB)  
o-Dichlorobenzene (1,2-Dichlorobenzene)  
m-Dichlorobenzene (1,3-Dichlorobenzene)  
p-Dichlorobenzene (1,4-Dichlorobenzene)  
trans-1,4-Dichloro-2-butene  
Dichlorodifluoromethane (CFC-12)  
1,1-Dichloroethane (Ethylidene chloride)  
1,2-Dichloroethane (Ethylene dichloride)  
1,1 -Dichloroethylene (1,1 -Dichloroethene; Vinylidene chloride)  
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)  
trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)  
1,2-Dichloropropane (Propylene dichloride)  
cis- 1,3-Dichloropropene  
trans- 1,3-Dichloropropene  
Di-isopropylether (DIPE)  
Ethanol  
Ethyltertiary butyl ether  
Ethylbenzene  
2-Hexanone (Methyl butyl ketone)  
Hexachlorobutadiene

**TABLE V**  
**MONITORING PARAMETERS FOR DETECTION MONITORING**

**Continued**

Hexachloroethane  
Methyl bromide (Bromomethene)  
Methyl chloride (Chloromethane)  
Methylene bromide (Dibromomethane)  
Methylene chloride (Dichloromethane)  
Methyl ethyl ketone (MEK: 2-Butanone)  
Methyl iodide (Iodomethane)  
Methyl t-butyl ether  
4-Methyl-2-pentanone (Methyl isobutylketone)  
Naphthalene  
Styrene  
Tertiary amyl methyl ether  
Tertiary butyl alcohol  
1,1,1,2-Tetrachloroethane  
1,1,2,2-Tetrachloroethane  
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)  
Toluene  
1,2,4-Trichlorobenzene  
1,1,1-Trichloroethane (Methylchloroform)  
1,1,2-Trichloroethane  
Trichloroethylene (Trichloroethene)  
Trichlorofluoromethane (CFC- 11)  
1,2,3-Trichloropropane  
Vinyl acetate  
Vinyl chloride  
Xylenes

**TABLE VI**  
**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

<b><u>Inorganics (dissolved):</u></b>	<b><u>USEPA Method</u></b>
Aluminum	6010
Antimony	7041
Barium	6010
Beryllium	6010
Cadmium	7131A
Chromium	6010
Cobalt	6010
Copper	6010
Silver	6010
Tin	6010
Vanadium	6010
Zinc	6010
Iron	6010
Manganese	6010
Arsenic	7062
Lead	7421
Mercury	7470A
Nickel	7521
Selenium	7742
Thallium	7841
Cyanide	9010B
Sulfide	9030B

**Volatile Organic Compounds:**

**USEPA Method 8260**

Acetone  
 Acetonitrile (Methyl cyanide)  
 Acrolein  
 Acrylonitrile  
 Allyl chloride (3-Chloropropene)  
 Benzene  
 Bromochloromethane (Chlorobromomethane)  
 Bromodichloromethane (Dibromochloromethane)  
 Bromoform (Tribromomethane)  
 Carbon disulfide  
 Carbon tetrachloride  
 Chlorobenzene  
 Chloroethane (Ethyl chloride)  
 Chloroform (Trichloromethane)  
 Chloroprene  
 Dibromochloromethane (Chlorodibromomethane)

## TABLE VI

### CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

#### Continued

1,2-Dibromo-3-chloropropane (DBCP)  
1,2-Dibromoethane (Ethylene dibromide; EDB)  
o-Dichlorobenzene (1,2-Dichlorobenzene)  
m-Dichlorobenzene (1,3-Dichlorobenzene)  
p-Dichlorobenzene (1,4-Dichlorobenzene)  
trans- 1,4-Dichloro-2-butene  
Dichlorodifluoromethane (CFC 12)  
1,1 -Dichloroethane (Ethylidene chloride)  
1,2-Dichloroethane (Ethylene dichloride)  
1,1 -Dichloroethylene (1, I-Dichloroethene; Vinylidene chloride)  
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)  
trans- 1,2-Dichloroethylene (trans- 1,2-Dichloroethene)  
1,2-Dichloropropane (Propylene dichloride)  
1,3-Dichloropropane (Trimethylene dichloride)  
2,2-Dichloropropane (Isopropylidene chloride)  
1,1 -Dichloropropene  
cis- 1,3-Dichloropropene  
trans- 1,3-Dichloropropene  
Di-isopropylether (DIPE)  
Ethanol  
Ethyltertiary butyl ether  
Ethylbenzene  
Ethyl methacrylate  
Hexachlorobutadiene  
Hexachloroethane  
2-Hexanone (Methyl butyl ketone)  
Isobutyl alcohol  
Methacrylonitrile  
Methyl bromide (Bromomethane)  
Methyl chloride (Chloromethane)  
Methyl ethyl ketone (MEK; 2-Butanone)  
Methyl iodide (Iodomethane)  
Methyl t-butyl ether  
Methyl methacrylate  
4-Methyl-2-pentanone (Methyl isobutyl ketone)  
Methylene bromide (Dibromomethane)  
Methylene chloride (Dichloromethane)  
Naphthalene  
Propionitrile (Ethyl cyanide)  
Styrene  
Tertiary amyl methyl ether  
Tertiary butyl alcohol  
1,1,1,2-Tetrachloroethane  
1,1,2,2-Tetrachloroethane



## TABLE VI

### CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

#### Continued

Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)  
Toluene  
1,2,4-Trichlorobenzene  
1,1,1 -Trichloroethane, Methylchloroform  
1,1,2-Trichloroethane  
Trichloroethylene (Trichloroethene; TCE)  
Trichlorofluoromethane (CFC- 11)  
1,2,3-Trichloropropane  
Vinyl acetate  
Vinyl chloride (Chloroethene)  
Xylene (total)

#### Semi-Volatile Organic Compounds:

##### USEPA Method 8270 - base, neutral, & acid extractables

Acenaphthene  
Acenaphthylene  
Acetophenone  
2-Acetylaminofluorene (2-AAF)  
Aldrin  
4-Aminobiphenyl  
Anthracene  
Benzo[a]anthracene (Benzanthracene)  
Benzo[b]fluoranthene  
Benzo[k]fluoranthene  
Benzo[g,h,i]perylene  
Benzo[a]pyrene  
Benzyl alcohol  
Bis(2-ethylhexyl) phthalate  
alpha-BHC  
beta-BHC  
delta-BHC  
gamma-BHC (Lindane)  
Bis(2-chloroethoxy)methane  
Bis(2-chloroethyl) ether (Dichloroethyl ether)  
Bis(2-chloro-1-methylethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)  
4-Bromophenyl phenyl ether  
Butyl benzyl phthalate (Benzyl butyl phthalate)  
Chlordane  
p-Chloroaniline  
Chlorobenzilate  
p-Chloro-m-cresol (4-Chloro-3-methylphenol)  
2-Chloronaphthalene  
2-Chlorophenol

**TABLE VI**

**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

4-Chlorophenyl phenyl ether  
Chrysene  
o-Cresol (2-methylphenol)  
m-Cresol (3-methylphenol)  
p-Cresol (4-methylphenol)  
4,4'-DDD  
4,4'-DDE  
4,4'-DDT  
Diallate  
Dibenz[a,h]anthracene  
Dibenzofuran  
Di-n-butyl phthalate  
3,3'-Dichlorobenzidine  
2,4-Dichlorophenol  
2,6-Dichlorophenol  
Dieldrin  
Diethyl phthalate  
p-(Dimethylamino)azobenzene  
7,12-Dimethylbenz[a]anthracene  
3,3'-Dimethylbenzidine  
2,4-Dimethylphenol (m-Xylenol)  
Dimethyl phthalate  
m-Dinitrobenzene  
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)  
2,4-Dinitrophenol  
2,4-Dinitrotoluene  
2,6-Dinitrotoluene  
Di-n-octyl phthalate  
Diphenylamine  
Endosulfan I  
Endosulfan II  
Endosulfan sulfate  
Endrin  
Endrin aldehyde  
Ethyl methanesulfonate  
Famphur  
Fluoranthene  
Fluorene  
Heptachlor  
Heptachlor epoxide  
Hexachlorobenzene  
Hexachlorocyclopentadiene  
Hexachloropropene  
Indeno(1,2,3-c,d)pyrene

**TABLE VI**

**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

Isodrin  
Isophorone  
Isosafrole  
Kepone  
Methapyrilene  
Methoxychlor  
3-Methylcholanthrene  
Methyl methanesulfonate  
2-Methylnaphthalene  
1,4-Naphthoquinone  
1-Naphthylamine  
2-Naphthylamine  
o-Nitroaniline (2-Nitroaniline)  
m-Nitroaniline (3-Nitroaniline)  
p-Nitroaniline (4-Nitroaniline)  
Nitrobenzene  
o-Nitrophenol (2-Nitrophenol)  
p-Nitrophenol (4-Nitrophenol)  
N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)  
N-Nitrosodiethylamine (Diethylnitrosamine)  
N-Nitrosodimethylamine (Dimethylnitrosamine)  
N-Nitrosodiphenylamine (Diphenylnitrosamine)  
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine)  
N-Nitrosomethylethylamine (Methylethylnitrosamine)  
N-Nitrosopiperidine  
N-Nitrosopyrrolidine  
5-Nitro-o-toluidine  
Pentachlorobenzene  
Pentachloronitrobenzene (PCNB)  
Pentachlorophenol  
Phenacetin  
Phenanthrene  
Phenol  
p-Phenylenediamine  
Polychlorinated biphenyls (PCBs; Aroclors)  
Pronamide  
Pyrene  
Safrole  
1,2,4,5-Tetrachlorobenzene  
2,3,4,6-Tetrachlorophenol  
o-Toluidine  
Toxaphene  
2,4,5-Trichlorophenol

## TABLE VI

### CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

#### Continued

0,0,0-Triethyl phosphorothioate  
sym-Trinitrobenzene

#### Chlorophenoxy Herbicides:

##### USEPA Method 8151A

2,4-D (2,4-Dichlorophenoxyacetic acid)  
Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)  
Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)  
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)

#### Organophosphorus Compounds:

##### USEPA Method 8141A

Atrazine  
Chlorpyrifos  
0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)  
Diazinon  
Dimethoate  
Disulfoton  
Ethion  
Methyl parathion (Parathion methyl)  
Parathion  
Phorate  
Simazine

## INFORMATION SHEET

ORDER NO. R5-2011-0029  
CALAVERAS COUNTY DEPARTMENT OF PUBLIC WORKS  
ROCK CREEK SOLID WASTE FACILITY  
CLASS II LANDFILL  
CLASS II SURFACE IMPOUNDMENT  
CONSTRUCTION, OPERATION, CLOSURE, AND POST-CLOSURE MAINTENANCE  
CALAVERAS COUNTY

Calaveras County Department of Public Works (hereafter Discharger) owns and operates the Rock Creek Solid Waste Facility (facility), a solid waste landfill about one mile east of Milton. The facility is located on an approximately 200-acre property at 12021 Hunt Road, Milton, California. The existing and future landfill area is approximately 57 acres of which 20 acres have been constructed (lined) for the discharge of non-hazardous and designated wastes. The facility consists of existing and future lined Class II landfill units divided by "phases" and a Class II surface impoundment for leachate collection. The facility is permitted to receive up to 500 tons of waste per day.

The facility is in the lower foothills of the Sierra Nevada mountains between elevation 300 at the south end of the property and elevation 520 at the north ridge of the canyon head on the north property line. The main feature at the site is the north-south canyon which includes the permitted landfill area. The drainage shed for the canyon is contained entirely on the property. There is a seasonal creek that flows to the south before exiting the site near Rock Creek Road.

The facility receives an average of 19.42 inches of precipitation per year as measured at the New Hogan Dam between the years of 1959 and 1986. The mean evaporation for this facility is 75 inches per year as measured at the New Hogan Dam between the years 1968 and 1985. Based on these data, average annual net evaporation at the facility is 56 inches.

The landfill is comprised of four phases as shown on Attachment B of this Order. Phases I and II have been constructed, and Phases III and IV are future expansion areas. The existing and future landfill units and the Class II surface impoundment are described as follows:

<b><u>Unit</u></b>	<b><u>Area</u></b>	<b><u>Liner Description (bottom to top)</u></b>	<b><u>Status</u></b>
Phase I-A	5.67 acres	24 inches of compacted clay overlain with a vapor barrier and blanket leachate collection and removal system (LCRS).	No longer accepting waste. To be closed with the final cover design approved in this Order.
Phase I-B	3.45 acres	24 inches compacted clay, 60-mil high-density polyethylene (HDPE), one foot thick blanket LCRS.	Not currently accepting waste. Most of unit to be closed with the final cover design approved in this Order, except for south end

<u>Unit</u>	<u>Area</u>	<u>Liner Description (bottom to top)</u>	<u>Status</u>
			adjacent to Phase II-A.
Phase II-A	4.98 acres	GCL, 60 mil HDPE and one foot thick blanket LCRS. A secondary composite liner and LCRS are beneath the central portions of the Phase II-A of the LCRS.	Existing unit accepting waste.
Phase II-B	5.71 acres	One foot thick prepared subgrade with maximum hydraulic conductivity of $1 \times 10^{-5}$ cm/s, 60-mil HDPE geomembrane, geocomposite drainage layer, GCL, 60 mil HDPE geomembrane, 9-inch thick gravel LCRS, 8 oz. non-woven geotextile filter, 15-inch thick operations layer.	Existing unit accepting waste.
Phase III	24.59 acres	Same liner system design as Phase II-B.	Future phase
Phase IV	12.43 acres	Same liner system design as Phase II-B.	Future phase
Class II Surface Impoundment	0.70 acres	GCL, 60-mil HDPE geomembrane, LCRS, 60-mil HDPE geomembrane.	Existing unit accepting leachate from the Class II landfill units.

The Discharger proposes to continue to discharge municipal solid waste, ash, sewage treatment plant sludge, petroleum contaminated soil, and miscellaneous contaminated materials in the existing and future Class II landfill units, as shown on Attachment B. These wastes are classified as inert waste, nonhazardous solid waste, or designated waste, using the criteria set forth in Title 27 CCR Section 20164.

The existing groundwater monitoring network for the Phase I and II landfill units and the Class II surface impoundment consists of "background" monitoring wells U-1 and U-2, and compliance monitoring wells D-1, D-4, D-8 through D-12, and HP-3. Monitoring well D-9 is located downgradient from the surface impoundment.

On 1 November 2010, the Discharger submitted an amended Report of Waste Discharge consisting of an 18 October 2010 *Phase I Partial Final Closure and Postclosure Maintenance Plan* for the closure of the Phase I-A and Phase I-B areas at the landfill. Approval of the closure and post-closure maintenance plan requires revision of the waste discharge requirements (WDRs) to approve the proposed final cover design. The

Discharger proposed an engineered alternative final cover consisting of, from bottom to top, the following layers:

- a. 18-inch thick soil foundation layer.
- b. 40-mil linear low density polyethylene (LLDPE) geomembrane, textured on both sides.
- c. Geocomposite drainage layer.
- d. 18-inch thick soil vegetative/erosion resistant layer.

The Discharger included the necessary engineered alternative demonstrations required by Title 27, California Code of Regulations. This Order approves the proposed final cover components for closure of the Phase I-A and Phase I-B areas and future closure phases for the landfill; however, design documents for future phases must be submitted for review and approval to verify they are in compliance with Title 27 and this Order.

Site drainage is to Rock Creek which flows into Littlejohns Creek, a tributary of the San Joaquin River and the Sacramento-San Joaquin Delta.

WLB



**Linda S. Adams**  
Acting Secretary for  
Environmental Protection

**California Regional Water Quality Control Board**  
**Central Valley Region**  
**Katherine Hart, Chair**

11020 Sun Center Drive, #200, Rancho Cordova, California 95670-6114  
(916) 464-3291 • FAX (916) 464-4645  
<http://www.waterboards.ca.gov/centralvalley>



**Edmund G. Brown Jr.**  
Governor

\_\_\_ April 2011

Jonathan Mitchell  
Calaveras County Department of Public Works  
891 Mountain Ranch Road  
San Andreas, CA 95249-9709

CERTIFIED MAIL NO.  
7010 1670 0002 0652 2166

**NOTICE OF ADOPTION  
OF  
REVISED WASTE DISCHARGE REQUIREMENTS ORDER  
FOR  
CALAVERAS COUNTY DEPARTMENT OF PUBLIC WORKS  
ROCK CREEK SOLID WASTE FACILITY  
CLASS II LANDFILL AND CLASS II SURFACE IMPOUNDMENT  
CONSTRUCTION, OPERATION, CLOSURE, AND POST-CLOSURE MAINTENANCE  
CALAVERAS COUNTY**

***TO ALL CONCERNED PERSONS AND AGENCIES:***

Waste Discharge Requirements (WDRs) Order No. R5-2011-0029 for the Rock Creek Solid Waste Facility was adopted by the California Regional Water Quality Control Board, Central Valley Region at its meeting on 8 April 2011.

Although the WDRs allow waste discharges to the Class II landfills and surface impoundment, the discharge is a privilege not a right and may be revoked at any time. A copy of the Order must be maintained at the facility and made available upon request.

Please review your WDRs carefully to ensure you understand all aspects of the discharge requirements. Please note that the Provisions of the WDRs require the Discharger to submit construction and design plans for approval at least 120 days prior to construction including updated detection monitoring programs for groundwater, unsaturated zone, and leachate monitoring. In addition, the Monitoring and Reporting Program (MRP) contains specified monitoring and reporting requirements for you to implement. Please review the MRP closely so that you may establish the appropriate sampling schedule.

To conserve paper and reduce mailing costs, a paper copy of the order has been sent only to the Discharger. The full text of this order is available on the Central Valley Water Board's web site at [www.waterboards.ca.gov/centralvalley/board\\_decisions/adopted\\_orders/](http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/). Anyone without access to the Internet who needs a paper copy of the order can obtain one by calling Central Valley Water Board staff listed below.

***California Environmental Protection Agency***



If you have any questions about making changes to your permitted operations, please contact Bill Brattain at (916) 464-4622 or [bbrattain@waterboards.ca.gov](mailto:bbrattain@waterboards.ca.gov). All compliance and enforcement questions should be directed to Mary Boyd with the Title 27 Compliance and Enforcement Section at (916) 464-4676 or [mboyd@waterboards.ca.gov](mailto:mboyd@waterboards.ca.gov). All technical reports and monitoring reports should be submitted to Ms. Boyd by the compliance due date.

VICTOR J. IZZO  
Senior Engineering Geologist  
Title 27 Permitting and Mining

Enclosures- Adopted Order  
Standard Provisions (April 2000)

cc w/Encl.: Rob Houghton, Veras Resources, Inc., Murphys

cc w/o Encl.: Andy Marino, California Department of Resources Recycling and Recovery,  
Sacramento  
Office of Drinking Water, Department of Health Services, Sacramento  
Environmental Management Branch, Department of Health Services,  
Sacramento  
Department of Fish and Game, Region 2, Rancho Cordova  
Leslie Graves, Division of Water Quality, SWRCB, Sacramento  
Patrick Pulupa, Office of Chief Counsel, SWRCB, Sacramento  
County of Calaveras, Planning Department, San Andreas  
Paul Feriani, Stanislaus County Environmental Health Department, San Andreas  
News Editor, Calaveras Enterprise, San Andreas